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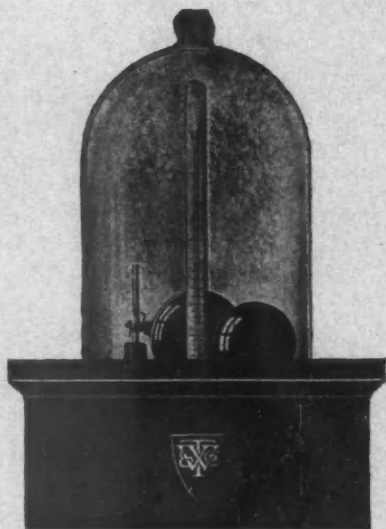
Programme
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Considerations of Nutrition in Relief Work

I.---The Nutritional Aspect of Relief Work

E. W. McHENRY

School of Hygiene and Connaught Laboratories, University of Toronto

THE extraordinary increase of unemployment resulting from the economic depression has brought acute problems of many kinds. Direct relief is now furnishing food and shelter to a large proportion of our population. Last year the estimated cost for direct relief throughout Canada was \$81,000,000, of which the Provincial Government of Ontario spent \$14,000,000. In a number of Canadian cities as many as 25 per cent of the population are receiving direct aid from the municipality, while in adjoining suburban districts as many as one-third of the citizens are on direct relief.

In the provision of relief, various needs must be satisfied: food, light, clothing, heat and shelter. More is involved than the mere maintenance of life. It is the duty of the state to maintain the physical condition of the population on as high a level as possible and it is essential that food be furnished not only to prevent starvation but to provide adequate nutrition. A third consideration is the prevention of discontent. To this end, the food supplied must be palatable and not differ too greatly from what would be ordinarily chosen by the individual. All these considerations must, however, be limited by the state's financial condition. In supplying food, the choice of kinds of foods, and even the total quantity, is dependent upon the amount of money available.

Since many people are now dependent for food upon what is given to them, there is an opportunity to place in practice the advances made in nutrition in recent years. It is obvious that much can be done to supply adequate diets and to encourage proper use of the food furnished. There are probably many children securing proper amounts of milk to-day who would have received inadequate amounts if the purchase of milk depended on the family. But large amounts of milk may also be wasted because of a lack of appreciation of its value. It is necessary to do more than supply as good a diet as is economically possible; educational measures are also required. Nutritional workers must also remember that it is difficult to effect dietary changes

overnight, if the alterations are radically different from current habits. Molasses is urged as a useful food because of its iron content. Canadians are, however, not accustomed to use much molasses and should not be compelled to do so. If such a change is desirable, proper educational measures can easily be employed. Attempts to make radical changes in dietary habits may produce undesirable aggravations, discontent, and indeed waste of food. It is readily feasible to provide suitable diets conforming to Canadian habits, nutritionally adequate and economically possible.

The nutritional requirements which should be considered in the planning of such diets are to-day fairly well agreed upon, namely: total quantity of food (caloric requirements), protein intake, inorganic element supply, and vitamins. These must be considered in choosing foods, keeping always in mind the element of cost.

(1) *Total quantity of food.*—This is fixed by estimates of energy requirements. It is generally agreed that the energy requirement of an average man is 3,000 calories per day. In this calculation it is assumed that the man is doing eight hours' moderate work. Since those on relief are unemployed, the energy requirement is lower and probably more nearly 2,700-2,800 calories. Nevertheless it is desirable, if financially possible, to furnish food on the larger basis. To calculate the food requirement of a family, it is necessary to use estimates of energy requirements for other members, and for ease of calculation these are generally given in fractions of man-value, *i.e.*, of the average man requirement just given. The fractions most commonly used are those of Cathcart, secured by a combination of figures previously calculated by Atwater and by Lusk. The Cathcart values are:

Man	1.00
Woman	0.83
Boy 14 years and over	1.00
Girl 14 years and over	0.83
Child 12-14 years	0.90
Child 10-12 years	0.80
Child 8-10 years	0.70
Child 6-8 years	0.60
Child 3-6 years	0.50
Child 2-3 years	0.40
Child 1-2 years	0.30
Child 0-1 years	0.20

Using these estimates, the caloric requirement of a typical family would be as follows:

Father	3,000	calories
Mother	2,490	"
Child of 12 years	2,400	"
Child of 8 years	1,800	"
Child of 4 years	1,500	"
Total	11,190	" per day

(2) *Protein intake.*—It is generally said that one gram of protein per kilogram of body weight is required per day. For an average man such an intake of 70 grams would supply only 9 per cent of the total calories and is, therefore, low. Recent surveys in Great Britain and a preliminary survey

in Canada have shown that people on a free-choice diet consume protein to provide 11 to 13 per cent of the total calories. Using an average value of 12 per cent, the total protein requirement of the above family is 335 grams per day. Since vegetable proteins are frequently deficient in essential amino acids, at least one-third, and preferably one-half of the total protein consumed should be animal in origin.

(3) *Inorganic element requirement.*—A number of inorganic elements must be furnished in the food and the ordinary diet will supply most of these in abundant amounts. Unless special attention is given, however, the diet may be deficient in calcium and iron. Calcium is most easily supplied in milk, and milk has many other advantages. The adult calcium requirement is satisfied by one pint of milk per day, and growing children should receive one and a half pints per day. On this basis the above family would receive three quarts of milk a day. This is financially impossible and calcium must be furnished by other foods, particularly cheese. The iron requirement may be satisfied from meat, eggs (if they can be supplied), and whole grain cereals.

(4) *Vitamins.*—All the vitamins except C and D can be easily secured by the inclusion in the diet of liberal amounts of milk and whole grain cereals. If it is financially possible, eggs can be utilized as a source of D, but families with young children should be given cod liver oil. Canned tomatoes, cabbage and other vegetables are generally used as sources of C. In relief dietaries which have come to the author's notice, turnips are not often included. The turnip is a cheap vegetable and it has been shown to be an excellent source of vitamin C. Indeed turnip juice has been successfully used in place of tomato juice for infants.

These are the basic considerations which should operate in the choice of foods, remembering always the cost. Examination of several relief dietaries in actual use has shown that it is possible in Canada at present to furnish a diet which meets these considerations.

II.---Planning Minimum Food Budgets

MARJORIE BELL

Director, Visiting Housekeepers Association, Toronto

IN planning any system of food relief for the families of the unemployed or partly employed, it is of the utmost importance that all scientific knowledge of nutrition be considered. As the money available will at best provide only the minimum necessary for maintenance, it is essential that returns in values be carefully studied and analysed so that the foods provided will give the best possible results in health. Decisions which are made unguided by a knowledge of values will result in grave deficiencies.

The two chief questions which have to be decided are the method by which the supplies will be distributed and what foods and quantities of foods

will be used. As the system of distribution will in some ways determine the food content, we will consider it first.

METHODS OF DISTRIBUTING SUPPLIES

Package System

The applicant calls at a central depot and is given a package containing all the food; or a package containing the staple foods is given and the perishable foods are delivered.

Neither of these methods is considered desirable. The first limits the number of perishable foods, while both may mean long waiting and difficult transportation for recipients. Undue publicity is also given to the family reduced to accepting relief. The claim for this system is that it is the least expensive, but those who have studied the matter state emphatically that this is not so. Another disadvantage is that of diverting trade from the natural channel of the store, which only adds to the vicious circle of unemployment. If this method is used, opportunity should be given for exchanging some of the foods, or waste will be incurred by the accumulation in the homes of foods which the families do not use. In some centres, tables are provided on which unwanted foods may be left.

Cash System

Money or an order is given and unrestricted choice is allowed in buying. Unless very careful supervision can be given, accompanied by an educational programme, this system is not desirable. In the present emergency it should not be considered.

Voucher or Grocery Order System

A list of foods is provided from which choice must be made, with the amount to be spent on different groups of foods limited. This provides some latitude of choice without endangering the nutritional value and some degree of independence is maintained, which is of great psychological benefit. Definite amounts should be designated for milk and canned tomatoes and a small sum should be allowed each week for tea, salt, baking powder, cocoa, flavouring, etc. Bargain prices may be taken advantage of.

When rations have to be handled on a large scale, there is little opportunity for changing the rations to suit fluctuating prices. At certain seasons the drop is so great that it justifies changing the lists, so that at times eggs may be allowed, as also fresh fruits such as apples and bananas, and a greater variety of vegetables. Fresh tomatoes may cost less than tinned, while at times bacon is very cheap and is most welcome.

THE CALCULATED FOOD BUDGET

Whatever system is decided on, a food budget should not be accepted unless its content has been calculated from food analysis tables for calories, protein, calcium, phosphorus and iron, and the vitamin supply carefully estimated. At least four basic lists are necessary to meet the needs of

varying families. It is usual to choose at least two representative family groups and calculate accurately supplies to meet their needs. These are then increased or decreased to adapt them for others. The groups generally taken are those of two adults with three children and two adults with five children.

TYPICAL CALCULATED FOOD BUDGETS

Family of Two Adults and One Child					Family of Two Adults and Three Children				
	Amount	Cost	Total Cost	Cost p.c.		Amount	Cost	Total Cost	Cost p.c.
Milk	9 qts.	.90	.90	29%	Milk	14 qts.	1.40	1.40	27%
Fruit, Vegetables					Fruit, Vegetables				
Potatoes	10 lbs.	.20			Potatoes	17 lbs.	.34		
Tomatoes (No. 2½)	2 tins	.20			Tomatoes (No. 2)	3 tins	.30		
Carrots, turnips, cabbage, onions, etc.	8 lbs.	.16			Carrots, turnips, cabbage, onions, etc.	11 lbs.	.22		
Beans	½ lb.	.02			Beans	1 lb.	.03		
Prunes	1 lb.	.10	.68	22%	Prunes	2 lbs.	.20	1.09	21%
Cereals, Breads					Cereals, Breads				
Bread	5 lvs.	.30			Bread	10 lvs.	.60		
Rolled oats	2 lbs.	.10			Rolled oats	3 lbs.	.15		
Flour	2 lbs.	.06			Flour	2½ lbs.	.08		
Rice, barley, cornmeal, farina, cornstarch, etc.	1 lb.	.05	.51	17%	Rice, barley, cornmeal, cornstarch, etc.	1 lb.	.10	.93	18%
Proteins					Proteins				
Meat and fish	3 lbs.	.36			Meat and fish	4½ lbs.	.54		
Cheese	½ lb.	.08	.44	15%	Cheese	¾ lb.	.11	.65	13%
Fats					Fats				
Butter	¾ lb.	.21			Butter	1¾ lbs.	.49		
Lard	½ lb.	.05	.26	9%	Lard	1 lb.	.10	.59	12%
Sugar	1½ lbs.	.11	.11	3%	Sugars				
Peanut Butter	¼ lb.	.05	.05		Sugar	2 lbs.	.14		
Extras .....		.15	.15	5%	Molasses	½ pt.	.10	.24	5%
					Peanut Butter	½ lb.	.09	.09	
					Extras .....		.20	.20	4%
Total cost			\$3.10	100%	Total Cost			\$5.19	100%

Family of Two Adults and Five Children					Family of Two Adults and Seven Children				
	Amount	Cost	Total Cost	Cost p.c.		Amount	Cost	Total Cost	Cost p.c.
Milk	19 qts.	1.90	1.90	27%	Milk	26 qts.	2.60	2.60	27%
Fruit, Vegetables					Fruit, Vegetables				
Potatoes	25 lbs.	.50			Potatoes	35 lbs.	.70		
Tomatoes	4 tins	.40			Tomatoes	5 tins	.50		
Carrots, turnips, cabbage, onions, etc.	13 lbs.	.26			Carrots, turnips, cabbage, onions, etc.	18 lbs.	.36		
Beans	2 lbs.	.06			Beans	3 lbs.	.09		
Prunes	3 lbs.	.30	1.52	22%	Prunes	4 lbs.	.40	2.05	21%
Cereals, Breads					Cereals, Breads				
Bread	14 lvs.	.84			Bread	17 lvs.	1.02		
Rolled oats	4 lbs.	.20			Rolled oats	6 lbs.	.30		
Flour	3 lbs.	.09			Flour	5 lbs.	.15		
Rice, barley, cornmeal, cornstarch, etc.	2½ lbs.	.13	1.26	19%	Rice, barley, cornmeal, cornstarch, etc.	3¾ lbs.	.18	1.65	18%
Proteins					Proteins				
Meats and fish	6 lbs.	.72			Meat and fish	8 lbs.	.96		
Cheese	1 lb.	.15	.87	13%	Cheese	2 lbs.	.30	1.26	14%
Fats					Fats				
Butter	2½ lbs.	.70			Butter	3½ lbs.	.98		
Lard	1 lb.	.10	.80	12%	Lard	1½ lbs.	.15	1.13	12%
Sugar					Sugars				
Sugar	3 lbs.	.21			Sugar	4 lbs.	.28		
Molasses	½ pt.	.10	.31	4%	Molasses	1 pt.	.20	.48	5%
Peanut Butter	½ lb.	.09	.09		Peanut Butter	¾ lb.	.17	.17	
Extras .....		.20	.20	3%	Extras .....		.30	.30	3%
Total Cost			\$6.95	100%	Total Cost			\$9.64	100%

It must be possible to fit the calculated list into a menu. When the food list has been calculated so that it meets the scientific standard, a menu for the week should be arranged and actually carried out. Mothers can be found to co-operate in doing this when the need is explained.

Such calculated budgets are now available from many sources. The averages on page 209 are made from those of Cleveland, Montreal, Toronto, Ottawa, Boston, New York State, the United States Department of Agriculture and the Department of Agriculture of Manitoba. This last named Department and the Nutrition Committee of the Health Service of the Federated Agencies of Montreal have food budgets accurately calculated for six different family groups. When agencies supplying relief use these balanced rations on which to base their supplies, they can feel reasonably sure that the needs of the recipients are being met. Thus much time is saved in estimating supplies, and if criticism arises there is scientific support for the selections.

The following are the averages taken from these budgets: milk, $27\frac{1}{2}$ per cent; fruits and vegetables, $21\frac{1}{2}$ per cent; cereals, 18 per cent; proteins, 14 per cent; and fats, sugars and extras, 19 per cent—total, 100 per cent. New York authorities advise that, if a quick estimate is required, reasonable results may be obtained by dividing as follows the money to be spent: milk, $\frac{1}{5}$ or more; fruits and vegetables, $\frac{1}{5}$, more or less; cereals, $\frac{1}{5}$ or more; proteins, $\frac{1}{5}$ or less; and fats, sugars and extras, $\frac{1}{5}$ or less. As it is difficult to have cereals and breads supplied entirely from whole grains, it is probably wiser to have the percentage for vegetables and fruits slightly lower than this estimate. Cod liver oil is a necessity for all children under two and advisable during the whole growing period. If not supplied by clinics or private sources, provision should be made for it in the food budget.

NECESSARY ADAPTATIONS OF MINIMUM ALLOWANCE

These budgets represent the minimum that should be allowed. To calculate as accurately as possible the requirements of a family, definite ages have to be selected. Here, however, only averages can be used. One of the serious faults of most budgets is that the allowance is decided by numbers, without taking ages into consideration. If the children are one, three or five years, their requirements are quite different from those of children aged twelve, fourteen and sixteen years. The overlooking of this is the source of many just complaints regarding rations. When applications for relief are presented, ages of children should be stated and adaptations made.

When Ages are Below the Average

For the family in which the children are below the average ages, milk, carrots, tomatoes and dried fruits will have to be increased and eggs allowed (except when prices are high). Finely milled cereals also should be included. If there is an infant on formula, extra sugar or corn syrup may be required. The latter is less sweet, does not lead children to crave sweetened foods and may be preferred in infant feeding. Meat, bread, cabbage, turnips, beans and coarse grained cereals may be decreased.

When Ages are Above the Average

When the children are above the average ages, a general increase is necessary. The requirement of boys and girls in the teen age is sometimes equal to, or

even greater than that of adults, and the statement from such families that they cannot make the regular supplies last is quite true. This greater requirement can be met by giving the budget for a larger family, by adding the budget of a smaller family, or by increasing the quantities of foods in the list as the family suggest, advising milk, cereals and vegetables. The last is probably the least wasteful and most satisfactory method.

Expectant and Nursing Mothers

An extra allowance of milk, fruit and vegetables should always be given. If possible, eggs should be added.

Families of the Partially Employed

When families are living on earnings from one or two days' work, intermittent work or very low wages, it is necessary to supplement their food supply. This is always a matter for individual decision, but it is best to give the most important foods—milk, whole grain breads, cereals, potatoes and other vegetables.

Persons Requiring Special Diets

Consideration to the needs of diabetic patients and others requiring special diets must be given in the planning of relief budgets.

FOOD VALUES IN THE BUDGET

Milk

In calculating a budget the most difficult requirement, and one of the most important, is that of calcium. Milk is the only food supplying calcium in any appreciable amount. Milk also is an inexpensive source of calories, phosphorus, perfect protein and easily digested fat. It supplies more vitamins than any other single food. Each growing child and pregnant or nursing mother should have four cups of milk daily and the minimum should be two cups (the Canadian quart contains five cups, the United States quart four cups). A considerable part of the milk supply should be used in cooking.

Cereals and Breads

Whole grain cereals and breads best supplement milk. They supply the iron and bulk in which the milk is deficient and are also a good source of inexpensive calories. Refined cereals and breads are deprived of much of their value.

Vegetables and Fruits

Because of their cheap calorie contribution, their mineral and vitamin content and alkaline ash, potatoes should be used in quite large quantities. They are much to be preferred to white bread and can be given to small children in place of cereals. Tomatoes are a cheap source of vitamin C and should be included in generous quantities in every low cost food supply. In baby feedings, strained tomato juice can replace orange juice. It may be kept for several days without any harmful effect if it is covered and kept

in a cool place. Other fruits and vegetables should be bought in the season at which they are least expensive. Their chief values are in vitamins, minerals and bulk.

Protein is necessary for growth and repair and gives stability and satisfaction in the meals. Ten to 15 per cent of the total calories should come from protein. Meat, cheese and milk supply proteins of the highest quality. Because of its high cost and deficiencies in other food values, meat is not justified in large amounts. Liver gives the best value. Dried beans are an inexpensive and valuable source, though not so complete in meeting the needs of the body.

Fats give satisfaction, calories and flavor. A limited amount of fat in the diet aids digestion. Butter is necessary for vitamin A, which is lacking in other fats.

Rice, barley, cornmeal, macaroni and flour are valuable chiefly for calories and for the ways in which they can be combined with other foods.

Sugars

Molasses contains large amounts of calcium and iron, and has laxative properties. It is a more valuable sweetening agent than sugar. Neither is necessary but some sweetening is appreciated by most people.

MENUS BASED ON THE MINIMUM BUDGET

The Need for an Educational Programme

No matter what system is used or what supplies given, there will be complaints. When investigated, these usually reveal that the mother is lacking in knowledge of the simplest principles of cooking and has no idea of how to plan a week's menu from the supplies. The family probably has been living chiefly on meat, potatoes, bread and tea, with cooked or package foods bought ready to eat. In some cities, recipe books and menu sheets have been prepared showing the arrangement of the foods for one week. These are given out with the orders. The following is a sample menu using recipes which are very simple and can be found in any cook book. Similar suggestions for dinner and supper are also given.

SAMPLE MENU FOR ONE WEEK

DAY	BREAKFAST	DINNER	SUPPER
1.	Cereal Milk Toast	Oven or pot roast Boiled or baked potatoes Carrots	Canned tomato juice Rice and cheese or cheese sauce on toast Bread and butter
2.	Cereal with molasses Milk Bread and butter	Cold meat or creamed meat or hash or meat loaf Potatoes Onions	Creamed potatoes Bread and butter Prunes or figs
3.	Cereal Milk Toast	Macaroni and cheese Prune and tapioca pudding or bread and apple pudding	Tomato and rice scallop Cornstarch pudding Bread and butter

4. Cereal Milk Toast	Fried pork liver Potatoes Turnips	Potato soup or creamed vegetables Peanut butter Oatmeal cookies
5. Cereal with molasses Milk Bread and butter	Vegetable soup Rice pudding	Canned tomato juice Creamed cabbage Baking powder biscuits or corn cake or gingerbread
6. Cereal Milk Toast	Fish Carrots Potatoes Chocolate cornstarch pudding	Scotch soup Toast Peanut butter
7. Cereal Milk Bread and butter	Baked beans or bean soup Cooked or raw chopped cabbage	Prunes or figs Fried cornmeal mush with molasses

SUGGESTIONS FOR DINNER AND SUPPER

Hash	Macaroni, meat and tomato	Creamed fish or meat
Fish cakes	Macaroni and cheese	Cabbage and cheese sauce
Potato soup	Cheese sauce on toast	Tomato soup
Vegetable soup	Rice and cheese sauce	Tomato scallop
Baked beans	Mixed vegetable salad	Tomato, rice and cheese
Potato cakes	Apple and cabbage salad	Baked potato and cheese
Scotch soup	Bean or pea soup	Bacon and fried potato
Cabbage salad	Scalloped potatoes	Creamed vegetables

Desserts

Dried fruit with sago, rice or tapioca	Gingerbread
Baked rice pudding	Caramel or chocolate cornstarch
Fried cornmeal mush and syrup	Tea biscuits and molasses
Steamed or boiled carrot pudding	Peanut butter biscuits
Oatmeal cookies	

Suggestions for Utilizing Supplies

In several cities a series of demonstrations teaching the use of supplies have been arranged for groups. The giving of suggestions for the use of the essential foods of the budget, with cooking instructions and related information, is most desirable. The following are samples of such educational material.

MISCELLANEOUS HINTS

Cook vegetables and fruits as short a time as possible.
 Add vegetables to stew and soup at the last of the cooking.
 Give children unheated tomato juice.
 Wash potatoes clean and cook in skins.
 Save vegetables by paring very thin.
 Several vegetables may be cooked together in the same pot.
 Butter bread before the meal. Keep butter off the table.
 Put some supplies away for the end of the week.
 Unwrap meat as soon as it arrives. Cover loosely.
 Cook as soon as possible.
 Mark bags when supplies come, or store foods in cans or bottles.
 Plan some place for storing foods.
 Start cooking cereals the night before.
 Stir only at the beginning of the cooking.
 The meat should be used for three meals, as follows: (1) pot roast;
 (2) hash, stew, shepherd's pie, meat loaf, rice and meat; and (3) soup.
 Make one tin of tomatoes flavor several dishes: tomato, rice and cheese;
 macaroni and tomato; vegetable soup; Scotch soup; tomato scallop.
 Cereals can be used for soup, omelet, puddings, drop cakes, Johnny cake,
 muffins, fried mush.
 Sago and rice can be cooked with prunes, figs, apples or fruit juice.
 Molasses may be used on cooked cereal or bread.
 To make good cocoa, mix sugar and cocoa, add a little hot water and
 boil a few minutes before adding milk.

The necessity for providing food is at the present time so general that the details are being studied as never before. This should result in establishing the most satisfactory methods.

For assistance in assembling and criticizing this material, thanks must be expressed to Miss Rosamond Carter and Mrs. V. Wilson.

III.---Food Relief Work in Montreal

MILDRED D. GOODEVE

Nutritionist, Child Welfare Association of Montreal

IN recent times the problem of feeding the unemployed has been, to a large extent, one of trying to balance the nutritional requirements with the economic conditions, but at times these economic difficulties are so great that the nutritional requirements may not be entirely satisfied. Even though sufficient food or money to buy food be supplied, the average house-keeper needs a vast amount of re-education to fit her for the preparation and cooking of this food so that it will be utilized to the full extent.

In March, 1932, the Nutrition Committee of the Montreal Council of Social Agencies prepared a weekly food budget based on a minimum standard of health. The dietary requirements of families with from one to six children, ranging from one to ten years of age, were considered. The content of the food was carefully evaluated and consideration was given not only to the value in calories, but also to the content of protein, calcium, phosphorus and iron. The costs were obtained from chain stores in various sections of Montreal; this cost sheet is checked each month and is available to those who are interested.

The Family Welfare Association has used these food budgets for the past year and finds them a sound basis for the instruction of those unfortunate people who have never learned to spend their money in the most profitable way. As food value alone was considered in the calculation, allowances must be made for such accessories as tea, coffee, soap, matches, etc. Approximately 40 cents to 70 cents, depending on the size of the family, is added to the food allowance for these articles; this makes the per capita cost between 14 and 16 cents a day. An order form covering meat and groceries to the following amounts is given to each family: \$1.50 per week to one person; \$2.00 per week for two persons; and an additional 50 cents per week for each additional person in the family up to a maximum of \$7.50 per week, even if the family consists of more than thirteen persons. One pint of milk per day for each child under the age of fourteen years is supplied, with a maximum of three quarts a day. The following bread allotment is made: three loaves of bread per week per person, four loaves for two persons, seven loaves for three persons, ten loaves for four persons, twelve for five persons, fourteen for six persons and nineteen for seven persons, and so on, with a maximum of twenty-one loaves per week for any larger family.

Before March 1, 1933, the unemployment situation for families in Montreal was handled by four separate sections of the community. The Jewish people were cared for by the Federation of Jewish Philanthropies; the French Roman Catholics by the St. Vincent de Paul Society; the English Roman Catholics by the Federation of Catholic Charities; and the Protestants by the Emergency Unemployment Relief Committee and the Family Welfare Association, through the Montreal Council of Social Agencies. In February the Advisory Relief Board of Montreal recommended a uniform system of relief and since March of this year uniform orders have been distributed by the various agencies.

The sample charts accompanying this article are being used in folder form by the Family Welfare Association and are now applicable to all relief orders in Montreal. These show the kinds and amounts of food with cost, the menu for the week and other suggestions to promote health and to further economy. The Nutrition Committee is of the opinion that each folder should be accompanied by a certain amount of instruction given by the public health nurse or the nutritionist, and that such instruction should educate the housewife in such things as the cooking of vegetables, the utilization of all vegetable water, the substitution of cheese for meats, the further use of whole cereals instead of refined ones and the use of more molasses and less sugar, etc. When this instruction is given for the first time to a family which has never before come in contact with an agency, the mother frankly admits that what was an impossibility before becomes a very workable proposition. With the aid of the Economical Cookery Book published by the Nutrition Committee, a great deal of help has been given, as very often the simplest recipes are not known in the community.

Much commercial advertising is misleading from a nutrition standpoint. It is necessary to correct this by the teaching of better cookery methods, the selection of suitable economical foods, the need of well balanced meals and wise budgetting if the advantages are to be gained beyond those of mere subsistence. These advantages consist in learning proper nutritional requirements for the family and the means of living economically.

SAMPLE CHARTS CHOSEN FOR ILLUSTRATION

FOOD BUDGET FOR ONE WEEK

For Two Adults, Two Children

13c per person per day.

Food	WEIGHT	COST APPROX.
Milk	10 qts.	\$1.00
Tomatoes	2 tins, 4 lbs.	.12
Potatoes	22 lbs.	.22
Carrots or Turnips	4 lbs.	.16
Cabbage	1½ lbs.	.04
Onions	1 lb.	.04
Dried Beans	1 lb.	.04
Dried Peas	1 lb.	.06
Prunes or Figs	1 lb.	.12
Brown Bread	8 loaves, 192 oz.	.48
Roll'd Oats or Cracked Wheat	2 lbs.	.10
Flour	1 lb.	.05
Rice or Barley	2 lbs.	.15
Cheese	¾ lb.	.08
Chuck Roast	3 lbs.	.39
Beef or Pork Liver	½ lb.	.08
Butter	1 lb.	.26
Peanut Butter	½ lb.	.08
Shortening	¼ lb.	.04
Molasses	1 pt.	.13
Sugar	1 lb.	.05

\$3.69

Milk	\$1.00	28 %
Fruit and Vegetables .....	.80	21½ %
Cereals .....	.78	21 %
Meat, Cheese, etc. ....	.59	16 %
Fats .....	.34	9 %
Sugars .....	.18	4½ %

\$3.60 100 %

FOOD BUDGET FOR ONE WEEK

For Two Adults, Six Children

13c per person per day.

Food	WEIGHT	COST APPROX.
Milk	20 qts.	\$2.00
Tomatoes	5 tins, 10 lbs.	.31
Potatoes	40 lbs.	.40
Carrots or Turnips	8 lbs.	.28
Cabbage	3 lbs.	.05
Onions	4 lbs.	.15
Dried Beans	1½ lbs.	.06
Dried Peas	1½ lbs.	.09
Prunes or Figs	2 lbs.	.23
Brown Bread	16 loaves, 384 oz.	.96
Roll'd Oats or Cracked Wheat	4 lbs.	.20
Flour	3 lbs.	.15
Rice or Barley	4 lbs.	.30
Cheese	1½ lbs.	.23
Chuck Roast	5 lbs.	.65
Beef or Pork Liver	1½ lbs.	.23
Butter	2 lbs.	.52
Peanut Butter	1 ½ lb.	.08
Shortening	1 lb.	.15
Molasses	1 qt.	.25
Sugar	2 lbs.	.10

\$7.39

Milk	\$2.00	27 %
Fruit and Vegetables	1.57	21 %
Cereals	1.61	22 %
Meat, Cheese, etc.	1.11	15 %
Fats .....	.75	10 %
Sugars .....	.35	5 %

\$7.39 100 %

Tea is not included as it has no food value. This does not imply that its use by adults is discouraged.

Reduce cereals and sugars to buy cocoa, seasonings, baking powder, etc.

MENUS FOR ONE WEEK

	Breakfast	Dinner	Supper
Sunday	Rolled Oats or Cracked Wheat Molasses Bread and Butter Milk	Chuck Roast Baked Potato Turnip Prunes	Chopped Raw Cabbage Grated Raw Carrot or Cheese Sauce on Toast Hot Water Gingerbread Milk
Monday	Rolled Oats or Cracked Wheat Molasses Bread and Butter Milk	Sliced Meat Tomato Sauce Onion, Potato or Stew with Dumplings Bread and Butter	Scalloped or Creamed Potatoes Bread and Butter Figs Milk
Tuesday	Rolled Oats or Cracked Wheat Molasses Bread and Butter Milk	Split Pea Soup Bread Rice Pudding	Scalloped Rice with Cheese Bread and Butter Milk
Wednesday	Rolled Oats or Cracked Wheat Molasses Bread and Butter Milk	Baked Liver Carrots and Onions Potatoes	Soup made with left over meat with barley and vegetables Bread and Peanut Butter Milk
Thursday	Rolled Oats or Cracked Wheat Molasses Bread and Butter Milk	Baked Beans Bread and Butter Figs	Cream of Tomato Soup Baking Powder Biscuits Milk
Friday	Rolled Oats or Cracked Wheat Molasses Bread and Butter Milk	Scalloped Potatoes Cheese Tomato with Bread Crumbs Bread and Peanut Butter	Split Pea Soup or Creamed Bean Soup Prunes Bread and Butter, Milk
Saturday	Rolled Oats or Cracked Wheat Molasses Bread and Butter Milk	Scotch Soup (made with Rolled Oats) Onion, Potato, Tomato Rice Pudding	Cabbage with Cheese Sauce Bread and Peanut Butter Milk

1. Each child under two must have 3 teaspoons of cod liver oil daily.
2. Tomatoes, fresh or canned, may be used in place of oranges.
3. Always use the water in which vegetables have been cooked for milk soup, soup stock or stews.
4. Use cheese, dried beans or peas in place of meat. Soak the dried vegetables overnight in hot water and use the water.
5. Day-old bread is better for children than fresh bread and costs less.
6. Buy clean food in bulk, instead of in boxes or packages; it is cheaper.
7. Milk, fruit, vegetables, wholewheat bread and cereals are essential to health.

IV.---Relief Food Allowances in Ontario

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DURING the past year the Advisory Committee on Direct Relief to the Provincial Government of Ontario has published a suggested standard of relief food allowances. This information has been appreciated by the large majority of municipal officials and others interested and it now forms the basis for much local food relief. There are, however, still many municipalities not following this adequate diet list in even its most important suggestions.

In several centres, city and county alike, four dollars weekly was the maximum relief allowed to a family, regardless of the number of children. Milk may or may not have been supplied in addition. The relief authorities

must have expected the recipients to grow part of their supply of potatoes and other vegetables, possibly also to do some canning of fruits supplied to them, or even to earn a little supplementary money. If people were unable or unwilling to do these helpful things, there is no doubt that many families, particularly the larger ones, have lacked an adequate diet.

Although increases in food allowances have been made in many municipalities in this past year, not all have increased the allowances sufficiently to bring them to an adequate level. One mother of twelve children living on an allowance at least one dollar and fifty cents below the government standard (and local prices were not particularly low) explained that she found it necessary to aim at "filling up" her children. She knew little of food values and neither believed in nor practised the little that she did know. For her food order she chose a 100-lb. bag of white flour and a 90-lb. bag of potatoes every two weeks, then, weekly, 10 lbs. of rolled oats, 5 lbs. of macaroni, 3 lbs. of rice, a 5-lb. can of corn syrup, 5 lbs. of sugar and about 5 lbs. (ten or fifteen cents' worth!) of extra vegetables. It is evident that, as the mother said, they could have used more vegetables. Prunes, figs and apples were allowed but none were bought, as it was found that the money spent on corn syrup provided cheaper filling for her family. The vegetable and fruit consumption of this family was only half the amount considered adequate. Canned tomatoes had been struck off the list of relief foods in this particular city, except in cases of illness. The milk, butter and fat, cheese and meat allowances were only a minimum. In the same breath in which she told of ways and means of filling the family, this mother, thirty-seven years of age and toothless, told of the increase in tooth decay in her children, that some of them were "choosey" eaters and that one child was ill in the hospital with a lung infection. After a year or so of feeding this type of diet, its deficiencies become apparent.

Visiting Housekeepers

Similar dietaries are occurring in all communities on both low and moderate levels of food allowances, due to the combination of lack of knowledge and lack of interest in a balanced diet. In 1931 in one almost bankrupt municipality it was felt that there was such a great need for instruction in adequate meal preparation that the services of two trained Red Cross visiting housekeepers were obtained. These have been continued as an emergency measure. The housekeepers have gone in and out of needy homes, buying and preparing economical yet nourishing meals and in general showing mothers either how to spend their relief vouchers to the best advantage or, on the other hand, how to make the best use of their relief food. In cases when the mother was ill, the housekeepers have helped in the homes.

Voluntary Service of Dietitians

To supplement the work of the visiting housekeepers, the dietitians in one municipality volunteered to help in every way to spread the gospel of

nutrition. Seven lessons in economical cookery were drawn up and designated The Red Cross Nutrition Course. A certificate and an economical cookery book were promised for good attendance. Groups of mothers from families on relief were formed and met once a week for an actual demonstration and a talk on the cheapest foods. Through these experiences the dietitians learned what women lacked in their relief supplies and, at the suggestion of officials, made recommendations for some additions and some curtailment. These were accepted and the total costs not increased. The dietitians' efforts were effective also in another section of the city in influencing the relief board to increase the voucher allowance to a much more adequate level of sustenance. In many cities and towns, dietitians are giving their services as described.

PREVALENT FOOD ALLOWANCES

Milk

This period is an opportune time to teach families the great value of milk. Many homes have not used an adequate amount, but this fact does not justify a public welfare board in cutting down the milk supply to a low level.

In one city using the government scale of food allowances, each head of a family applying for relief discusses with a trained worker the amounts of bread and milk which he is accustomed to use. If the family's milk consumption is abnormally low, it is suggested that they try taking an additional quantity. Both milk and bread tickets are supplied by the city at a reduced price. After the cost of these is deducted, the remainder of the voucher is spent on groceries, etc. This partial apportioning of the voucher would seem to be a splendid piece of educational work, especially for homes where tuberculosis or other disease exists.

In contrast, in another city using a scale of food allowances considerably lower than the government scale, only the bread tickets are allotted, the remainder of the allowance having to supply both groceries and milk. One can understand how inadequate the milk supply will be in most cases. In this same city, however, extra allowance is made for infants and in cases of illness.

An adequate milk supply to those on relief is a particularly difficult problem in some of the northern towns of the province. Fresh milk is often difficult to obtain and is usually very expensive (as high as twenty cents a quart in some places). Few homes in the north have been accustomed to using milk in adequate amounts; in consequence, public welfare boards do not feel obliged to supply it. In one city, a family with three children is given two cans of evaporated milk weekly—the equivalent of about one and one-half quarts of fresh milk. The families with five to eight children get three large cans of milk weekly, the equivalent of about two and one-third quarts of fresh milk. The cost of the canned milk is several cents more per quart than is paid for fresh milk in southern Ontario. Even though children learn to use diluted evaporated milk as a beverage, sufficient is not

supplied. Letters from several rural communities indicate that the problem of an adequate milk supply is quite severe for them.

Bread, Cereals and Legumes

"The grain crops are still the staff of life of mankind," a noted nutritionist declared. "If mothers could be persuaded to select bread and cereals chiefly in the form of whole grain or slightly milled, as distinguished from highly milled, much better mineral and vitamin values would be obtained.

According to one social worker, the cry is still "More bread," even though most relief supplies contain large amounts of the highly milled grain products and refined starches such as white flour, white bread, macaroni, rice, sago and tapioca, with lesser amounts of other starchy but less highly milled foods such as oatmeal, barley, beans and peas. People are accustomed to "filling in" with bread. This is quite legitimate as long as white bread is not used to the exclusion of vegetables, fruits and milk. The temptation of many mothers is to give little thought to balanced meals and depend on bread for a much higher proportion of their family's food than is healthful. It is interesting to note that in one city at least, the relief store now handles wheat germ and wheat flakes, as well as rolled oats. This is no doubt due to the influence of two dietitians who are now advising the welfare board regarding food allowances. The value of whole grain cereals, therefore, is being emphasized in the local Red Cross nutrition classes, as is the use of beans and peas as meat substitutes.

Meat, Fish, Cheese and Eggs

Some relief offices still do not sanction the purchase of cheese or fish, while eggs are commonly taboo, being allowed only in "cases of illness." It is difficult to afford eggs on most of the relief allowances. Moreover, the same food values that are in eggs can be obtained from cheaper foods. However, if a few eggs can be bought occasionally it is a great incentive and helps a good housewife and cook.

Some difficulty is being experienced in getting a varied meat supply. Cities often buy their own beef and have it cut up by the local butchers. The recipients of relief then get beef continuously. There is usually the same monotony in cities dealing with one central abattoir. Possibly there would be more complaints if the city tried to distribute a greater variety of meats, as only a small percentage of the people know how to make use of pork liver, hearts or hocks, for example. Many municipalities specify at which grocery store a person must deal. If the grocer carries only cooked meats and has to send out for fresh meat, the choice is limited and the wise shopper is prevented from getting the best value from her allowance.

Vegetables and Fruits

A great deal of education is necessary before people will recognize the fundamental values of these foods. It is commonly reported that a family will return a can of tomatoes to a relief depot if they can get more jam. In spite of all that is known in regard to the protective value of tomatoes, one

welfare board has recently cut them off its list except in cases of illness or poor health. This same board, composed almost entirely of men, wanted to substitute vegetables for meat, although its meat allowance is only moderate. It is true that too few vegetables were being allowed, but vegetables can never replace meat in food value. On the other hand, there was ample reason for complaints from a community in which large amounts of vegetables were made available for those on relief and it was a real task to utilize them. At the same time the poor clamoured for wider privileges of choice on their grocery order.

A certain town does not allow any canned goods to be bought on a relief voucher. The town is located in a fertile fruit belt and its relief board presumed that home canning could be done more extensively. Since such expectations are never fully realized, it may be understood that many children in this town have lacked tomatoes and other of the cheaper canned vegetables and fruits.

On its relief voucher, the provincial government has stated that ten per cent of the total weekly allowance may be spent for household necessities not listed. This would allow people to buy occasionally a few lemons, bananas or oranges for flavoring. In making satisfactory use of the cheapest foods a little of these so-called luxuries is almost essential. Many cities prohibit merchants selling any of this type of food to those on relief. This ruling does not prevent some families from over-indulging in unwise purchases, but for those who would use the privilege wisely it is a decided handicap.

Fats and Sugars

One town has refused to have butter purchased on its relief voucher. If plenty of whole milk were provided, the lack of butter would be made up, but this is not the case.

When actual food is supplied to those on relief, usually only a minimum of fat (butter and lard) is provided. In the nutrition classes with groups of mothers on relief, they very often speak of the need for more fat, or else how difficult it is to afford enough fat on the limited amount of the voucher. With the unavoidable use of so much carbohydrate food in an economical dietary, there is a need for more fat for flavor value. Left-over fats and drippings prove a great help to the charwoman who is on relief.

The amount of cane sugar given by food depots is a minimum, though adequate, but most families want a great deal more. Any additional sweet usually is given in the form of corn syrup, honey, jam or molasses. Many families choosing their foods on the voucher system continue to buy large amounts of sugar and bread—the two great “fillers.” The regular use of some molasses for its high iron content is frowned on as not “liked” by the family.

Extras

Such material as spices and seasonings are essential to the economical housewife who must use them to make the cheaper foods tasty. None the

less, relief depots seldom carry any seasonings. It is expected that the people will supply these with their spare cash. In one city using a limited voucher system, when spices or seasonings are required special permission must be obtained from the relief officer, as these cannot be sold without special consent. There may have been a need to restrict this type of purchase, although it would seem hardly possible.

Miscellaneous

One is told continually that the soaps, cleansers, toilet paper and, in some cases, household remedies which must be purchased, take an amazing amount from the food orders. To help reduce this expenditure, some women are learning to make their own soap for cleaning purposes. The necessary fat is, as often as not, a donation.

Judging from the experiences in various Ontario communities, it would seem that many desirable changes could still be effected and larger allowances for food made in some places. Wherever the government schedule is followed, there can be at least an adequate diet if the mother is clever in buying and cooking. Where the allowance is much below the government level, it is an impossibility to supply adequate food unless one has access to free vegetables or owns chickens or a cow, unless local prices are unusually low. The fact that a well-informed Ontario municipality within the last month would adopt a scale of relief food allowances based apparently on wholesale prices, leaves one rather despairing. Reports from outlying districts, from a Red Cross Outpost nurse in particular, indicate that in receiving direct relief from the government the people are receiving a more adequate allowance than they formerly did from the local municipality. The nurse explains that the government allowance in her district is varied to meet the needs of different families.

A more encouraging view of the problem can be seen in the changes for the better which, gradually, are being made in numerous self-supporting communities. These changes show that the people both on and off relief are becoming more food conscious. They are insisting on the right of every citizen to an adequate supply of good health-protecting food. In this country, with its varied agricultural products, there should be for everyone the chance to have a strong body. Those welfare boards which persist in withholding necessary foods "except in cases of illness" are going to find themselves faced with the generally lowered resistance of those on relief, the numbers of whom have increased steadily.

The Pathology of Measles Encephalitis*

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IN applying the above title to this paper, we are quite aware that the condition under consideration is believed by many to be a non-inflammatory one and to them, therefore, the term "encephalitis" or "encephalomyelitis" is, strictly speaking, not applicable. We are also quite aware that while the condition is closely associated with measles, it has not yet been established that it is the result of infection with the measles virus and for this reason it is argued that the condition should not be labelled "measles encephalitis". However, as both of these questions are still unsettled and since the term "measles encephalitis" has been in more or less general use for some years, we prefer this term, at the same time recognizing its limitations.

In the present state of our knowledge, then, it is impossible to define clearly just what is implied by the term "measles encephalitis". For the purpose of this paper, however, the condition may be broadly defined as a disease of the central nervous system complicating measles, the etiology of which is still obscure.

It is not the purpose of this paper to attempt to settle either of the above mentioned controversial points, but rather to bring to the attention of the Laboratory Section of the Canadian Public Health Association the fact that this disease occasionally complicates measles in this country, and to urge laboratory workers throughout the Dominion to bear this condition in mind and to be prepared to undertake a pathologic study, including animal inoculation, of any material which may become available. In this manner important contributions may be made to our knowledge of this subject.

HISTORICAL

Nervous complications of measles have been recognized for more than a century, but the first description of the pathology was published in 1886 by Barlow and Penrose(1) who reported the histological findings in a case of paraplegia which developed a few days after the appearance of the measles rash. The changes which they described as early disseminated myelitis consisted, chiefly of marked vascular congestion with perivascular zones of coagulated exudate, beyond which there was infiltration with leucocytes. The picture as described by them certainly resembles very closely that observed by more recent authors. However, although the condition was recognized many years ago, it appears to have been comparatively rare until within the last decade.

In England 5 cases were reported in 1904, but during the subsequent 20-year period, according to Greenfield(2), only 1 case was recorded. The condition, however, since 1924 has become much more common. While one must bear in mind the possibility that cases are being recognized now which previously would have been overlooked, and that some of the more recently recorded cases may not have been correctly diagnosed, at

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the same time there can be no doubt but that genuine measles encephalitis is more prevalent than it was previous to 1924. Since this date cases have been reported from continental Europe, from England, and particularly from the United States. In 1926 Neal and Appelbaum(3) saw 8 cases in the state of New York and expressed the opinion that encephalitis followed measles more frequently than it did all the other infectious diseases put together. A somewhat similar view was expressed by Rolleston(4) in 1925. In 1928, in his review, "Nervous Complications of Measles", Ford (5) gave a summary of the literature from which he collected 113 cases and added 12 of his own. The only case report we were able to find in the Canadian literature was published by Miller and Ross (6) of Alberta in 1931, under the title, "Acute Transverse Myelitis Complicating Measles".

Clinical Picture

Ford (5) in his review classifies the cases into the following groups:

- I. Cases showing diffuse cerebral symptoms of brief duration.
- II. Cases showing multiple focal cerebral symptoms.
- III. Cases with single focal cerebral lesions—hemiplegias and aphasias.
- IV. Cases with cerebellar syndromes.
- V. (a) Cases of paraplegia with general involvement of the nervous system with stupor and convulsions.
- (b) Cases showing spinal cord syndromes in which the patient is mentally clear.
- VI. Cases of other nervous complications of measles, as, for example, transient mental disturbances, prolonged toxic psychoses and reduction in intelligence.

The onset of nervous symptoms may occur after the rash has disappeared, while the rash is still present, or in rare cases even before it has made its appearance. The usual time, however, is about the end of the first week of the disease.

CASE REPORT

M.S., a 7 year old girl, had always been well until the week before admission (Jan. 21, 1932). There was no definite history save that during this time she did not feel well. *Three days before admission* she developed a "measly rash". She also had a cough and cold at this time. Two days later a purplish blotchy rash was noticed all over her body, she developed a fever, and following a convulsion she became drowsy and unconscious. The convulsion occurred about 36 hours before she was brought to the hospital, and coma had persisted since then.

She was admitted in a comatose, moribund, cyanosed condition and her temperature was 108.4° F. Over her face and chest was a blotchy rash. There was no neck rigidity; Kernig negative. Respirations were Cheyne-Stokes in character; coarse rhonchi and râles were heard in the chest and the heart sounds were weak. Spinal fluid showed 80 cells, 80 per cent of which were lymphocytes; the pressure was not recorded. She died 20 minutes after admission.

At autopsy there was a fine purplish rash on the face, hips and thighs. Except for congestion the viscera were normal. The *brain* showed marked venous engorgement which gave it a rather diffuse reddish blush; there was no exudate. On section the grey and white matter seemed pinker in colour than usual, and in the white matter particularly, the cut ends of the congested vessels were unduly prominent. The lateral, third and fourth ventricles

contained a normal amount of clear fluid; the vessels in their walls were congested. Transverse sections of the medulla and pons revealed some congestion of the blood vessels and in a few instances there were small reddish spots suggestive of hemorrhage. The cut edges of the medulla everted considerably.

The intracranial venous sinuses, middle ears and mastoid antra were all clear. Unfortunately the importance of examination of the spinal cord was not appreciated until after the body had been removed.

Cultures of the blood, fluid from the third ventricle and from the base of the brain were all sterile.

Microscopic studies were carried out on formalin-fixed blocks of tissue from the cerebral cortex, sub-cortical white matter, caudate and lenticular nuclei, optic thalami, internal capsule, cerebellum, and various levels of pons, medulla and upper cervical region of the cord. Paraffin sections were stained with hematoxylin and eosin, Mallory's phosphotungstic acid and hematoxylin, and Weil's modification of Weigert's myelin sheath stain with counterstaining with carmine. Frozen sections were stained with scarlet red, Weil's stain, and with Penfield's modification of Hortega's silver carbonate method.

Pathological changes of greater or less degree were found in almost every section studied. Those from the cerebral cortex showed congestion of the superficial vessels with a moderate degree of diffuse infiltration of the pia-arachnoid space with mononuclear and polynuclear cells. The cytoplasm of a few of these was eosinophilic. Similar cells were found in the meninges surrounding the pons and medulla. With the exception of vascular congestion the cortex itself showed no recognizable pathological change. In the sub-cortical white matter this same vascular congestion was even more apparent (Fig. 1). In addition many of the blood vessels, but not all, were surrounded by a zone of coagulated exudate (Fig. 2) in and around which were numerous cells. In contrast with the picture of perivascular cuffing as seen in the lethargic type of encephalitis in which the cells are almost wholly contained within the perivascular or Virchow-Robin space, this perivascular cuffing at no place was so intense and the majority of the cells appeared to be outside the Virchow-Robin space, gradually shading off into the surrounding tissue. In these perivascular cuffs chiefly two types of cellular elements could be demonstrated. The nuclei of the majority of the cells were small, rounded to slightly oval or rod-shaped and stained rather deeply with hematoxylin. The nuclei of the other cells were larger, round, oval or slightly indented and stained less deeply; they contained a fine chromatin network. In addition to these main types, there were also present a few plasma cells with "clock-face" nuclei and a very occasional polynuclear cell. In silver carbonate preparations some of these smaller cells appeared to be microglial elements, but the microglial cells did not appear to be sufficiently numerous to account for the majority of cells present.

Perhaps the most striking pathological picture was revealed in the Weigert-stained sections. By this method many of the smaller vessels were found to



Fig. 1. Sub-cortical white matter showing vascular congestion, and perivascular coagulated and cellular exudate. Hematoxylin and eosin stain. (X 36).



Fig. 2. Higher magnification of largest vessel in Fig. 1. The perivascular zone of cells shades off gradually into the surrounding white matter. (X 120).

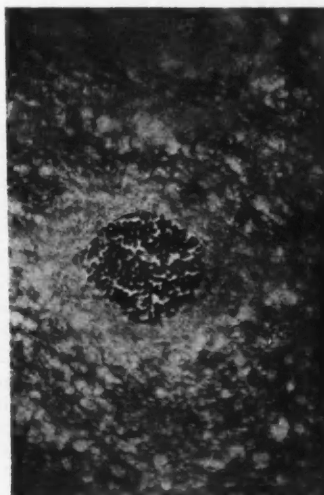


Fig. 3. Perivascular zone of demyelination in sub-cortical white matter. Weil's modification of Weigert's myelin sheath stain. (X 240).



Fig. 4. Upper cervical region, showing perivascular cellular infiltration. Hematoxylin and eosin stain. (X 240).

be surrounded by a zone of demyelination corresponding in size to that of the zone of perivascular cuffing (Fig. 3).

In frozen sections stained with scarlet red, in only a few instances were we able to find phagocytic cells containing fat droplets in the perivascular cuffs.

Sections from the caudate and lenticular nuclei and optic thalami showed moderate vascular congestion but only a few perivascular cellular elements. Except for some slight shrinkage and indifferent staining, some of which may have been artefact, the nerve cells of cortex, basal ganglia and medulla were little altered. This is in marked contrast to the picture sometimes seen in poliomyelitis or polioencephalitis, in which the nerve cells in the inflammatory zone may show all grades of degeneration, even up to complete neuronophagia.

Changes similar to those described above but varying in intensity were found not only in the sub-cortical white matter but also in the internal capsule, white matter of cerebellum, and various levels in the pons, medulla and upper cervical cord (Fig. 4). In a general way it may be said that the lesions gradually diminished from above down, being more marked in the sub-cortical white matter than in internal capsule, pons or cerebellum, and still less marked in medulla, although in the upper cervical region a few areas were found which showed quite well marked changes (Fig. 4).

COMMENT

The microscopic findings as recorded above do not differ materially from those previously reported in the literature. The interpretation of such findings, however, has given rise to considerable discussion and the question at present is by no means settled. Briefly, two main views are held: (1) that the lesion is purely and simply a degenerative one and, therefore, should be termed an encephalopathy rather than encephalitis or encephalomyelitis; and (2) that the lesion is truly an inflammatory one and that the term encephalitis is, therefore, properly applied.

That perivascular demyelination is at least a common if not a characteristic finding most authors agree. Such demyelination has been reported by Bergenfeldt (7), Mosse (8), Brock (9), Wohlwill (10), Perdrau (11), Greenfield (2), Walthard (12), Ferraro and Scheffer (13) and others. That this is a manifestation of a toxic non-inflammatory process is the view held by many, particularly Ferraro and Scheffer. These authors tend to minimize the importance of perivascular infiltration with lymphocytes and plasma cells, but place great stress upon the proliferation of the microglial elements. A comparison, however, of the hematoxylin-eosin preparations of these authors with their silver carbonate sections fails to convince one that the bulk of the cells are really microglia cells. That is, in their hematoxylin-eosin sections the cells in the perivascular regions appeared to be much more numerous than in the silver carbonate sections, and the inference is that there are, therefore, in these regions many cells other than microglia cells. If this inference is correct, and if these other cells are lymphocytes and plasma cells, then there is evidence to support the view that a true inflammatory reaction at least accompanies the degenerative one.

That both inflammatory and degenerative changes can and do occur simultaneously in one tissue is a matter of common knowledge. For example, many cases of acute glomerulonephritis show a concomitant tubular degeneration; and acute suppurative myocarditis is accompanied by degeneration of muscle fibres; also septic emboli in the

brain give rise not only to an acute encephalitis but may also result in marked degeneration of brain substance. May not the same association of both pathological processes be true in encephalitis complicating measles? We have reason to believe that it is. While we were able by Penfield's modification of Hortega's silver carbonate method to demonstrate an increase in microglial elements in the perivascular regions, this type of reaction with us was not nearly so prominent a feature as is claimed by some other authors, and our hematoxylin and eosin stained sections showed many more cells than could be demonstrated by the silver stains to be microglial cells. The majority of these cells resembled lymphocytes, while others had the appearance of plasma cells; polymorphonuclear cells were very scarce.

Greenfield (2), while of the opinion that "the most characteristic change is the zone of demyelination of greater or less width around many of the small veins", nevertheless says the following in favour of an inflammatory reaction:

"When we consider the acute febrile onset of the nervous complications, the high pressure of cerebro-spinal fluid, the frequent presence of papilloedema, and the congested and sometimes hemorrhagic appearance of the brain and cord, one finds all the cardinal evidences of inflammation, 'rubor, calor, tumor'."

Another argument in favour of the inflammatory nature of the condition is the fact that in recent years it has become much more common and may be said to have assumed something of epidemic proportions. This aspect of the subject, however, cannot be discussed without considering the etiology. Are the nervous complications of measles merely the result of a toxic effect on the central nervous system, and if so, what is the source of the toxin? Or are they the result of direct invasion of the nervous system with the same virus that is responsible for the exanthem? Or is there some other neurotropic virus which is in some manner stimulated to activity by the action of the measles virus? These are some of the questions which call for further investigation before they can be satisfactorily and conclusively answered.

Of recent years certain evidence has been produced which would at least suggest that the virus of measles encephalitis is not the virus of the exanthem. An excellent discussion by Jorge (14) of this phase of the subject has recently appeared in the *Lancet*. In discussing the etiology of post-vaccinal encephalitis he also draws attention to the similarity of the histological picture in this disease and that of measles encephalitis and encephalitis following small-pox and influenza. This similarity had previously been emphasized by Perdrau (12) and Greenfield (2).

While any detailed discussion of the relationship to one another of these various encephalitides is beyond the scope of this paper, at the same time these diseases seem to be so closely related that at least some reference to them seems necessary. In favour of the view that all the above mentioned types of encephalitis are caused by a common virus, it may be noted that there is a marked similarity of the histological lesions in all cases, whether following vaccination, small-pox, measles or influenza. This distinguishing feature is commonly referred to as perivascular demyelination. The picture differs from that found in encephalitis lethargica and also from that of acute poliomyelitis or polioencephalitis. This virus, according to Jorge, may possibly also produce a spontaneous encephalomyelitis quite independent of previous infection or vaccination, but it is usually stimulated to activity by some other virus, as for example small-pox, vaccinia, measles, influenza, etc. The increased frequency with which these various types of encephalitis are being encountered is at least suggestive of a common origin, and would tend to support the view that the process is an inflammatory one. On the other hand, it has been pointed out that in the countries in which post-vaccinal encephalitis has been most common, the post-infectious encephalitides have been comparatively rare. Particularly has this been the case in Holland. Also as shown by Ford (5), post-measles encephalitis is frequently followed by sequelae, as for example mental deterioration or personality change, etc., while such sequelae in the post-vaccinal cases are much less common. Then, too, while sequelae are not so frequent in the post-vaccinal cases, this type has a

much higher mortality; Jorge gives the following figures—England 58 per cent, America 43 per cent, Germany and Holland 34 per cent, Austria and Sweden 14 per cent.

SUMMARY

A case of encephalitis complicating measles is here reported, together with histological findings.

These findings do not differ materially from those previously recorded in the literature.

While the exact nature of the lesion is still in doubt, in our opinion the balance of evidence is in favour of an inflammatory process rather than one of simple degeneration.

The similarity of this disease to encephalitis following vaccination, small-pox and influenza is discussed, but the exact etiology of any of these diseases does not as yet appear to have been established.

In conclusion we should again like to urge the pathologists and laboratory workers that they be on the lookout not only for cases of measles encephalitis which may come to autopsy, but also for the various other types of post-infection encephalitis; that their examinations include not only the brain but also the spinal cord, and that they be prepared to secure material for animal inoculation. The latter may be accomplished by removing portions of cord or brain aseptically and placing them in 50 per cent glycerine in normal saline solution. In this manner our knowledge concerning this disease should be augmented and some of the existing problems solved.

We wish to express our appreciation to Doctor E. Linell, Professor of Neuropathology, for his kind assistance and criticism.

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The Annual Report of the Medical Officer of Health*

R. D. DEFRIES, M.D., D.P.H.

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THE preparation of the annual report of the health department by the medical officer of health is considered often as a formality or as a task, undertaken in accordance with the requirements of the Public Health Act. Frequently he considers the report as satisfactory when he has obtained the vital statistics of the community from the municipal clerk (divisional registrar), the reported cases of communicable diseases from the records of his own office, and the formal reports from those responsible for public health nursing, sanitation, and other services.

In several of the provinces almost every health officer presents as his annual report to the municipality a duplicate copy of the report submitted by him to the Provincial Department of Health. This report consists of several mimeographed sheets in questionnaire form giving chiefly statistical information. From the standpoint of a provincial department, a uniform report is essential if the data supplied by local medical officers are to be used, particularly when it is remembered that reports are received from several hundred officers. Unless uniform reports were used, individual reports would vary greatly and the desired information would not be complete.

The value of such a uniform report to the provincial department is at once evident, but its value as the annual report to the local board of health and to the community is open to serious question. The very nature of the report in its stereotyped form, presented year after year to the local board of health, creates the impression that the report is an annual formality and that the duty of the health officer has been fulfilled in accordance with the Public Health Act. It may be worth while, therefore, to analyse the purpose of the annual report and to consider the audience for whom it should be prepared.

PURPOSES OF THE REPORT

The report should be prepared, in the first instance, for the municipal officials. It is usually presented at the annual meeting of the local board of health, to be later transmitted to the municipal council. The first purpose should be, therefore, to outline what has been accomplished during the year. Of equal or even greater importance is the directing of their attention to urgent health work which needs to be done, indicating how this work may be accomplished by extensions of services, passing of regulations, etc. The third purpose is to show how the money appropriated has been expended in advancing the health of the community. Lastly, and of importance also, is the preparation of the report with the definite objective of its being read by the citizens, conveying to them a clear picture of the achievements of their health department and its needs, thus fostering an intelligent and active

*Presented before the Section of Vital Statistics at the 21st Annual Meeting of the Canadian Public Health Association, Toronto, May, 1932.

†From the Department of Epidemiology and Biometrics.

interest. A report in which due consideration has been given to this, is at once appreciated by the press, with the result that much of the report will be published and read with profit by the citizens. Pride in the municipality's health record will be engendered, and during the following year the press will be glad to publish more information concerning the health department's activities. Published reports are exchanged by municipalities and are of great value to health administrators of other municipalities. Their value can be enhanced if essential data be included in comparable form. In addition, the report forms a permanent record of the department's activities, available for reference by members of the department in future years.

CONTENT OF THE REPORT

It is at once agreed that the section written by the health officer outlining the health situation of the community should be the most important contribution in the report. The reports of the various divisions of the department should be subsidiary. The inclusion of a financial statement is essential to an adequate report. The following, therefore, are reasonable divisions:

- (a) Plan of the health department organization.
- (b) General outline of the health conditions,—the health officer's statement.
- (c) Reports of the various divisions, including vital statistics.
- (d) A financial statement.

These divisions are at once evident in the many excellent reports of the larger cities and are equally essential in the compiling of the reports of small municipalities.

Plan of the health department organization

There is no need to stress the value of presenting, on the first page of the report, a concise outline of the divisions of the department and a summary of the personnel. It is most helpful to the reader of the report to have at hand this information at the commencement of the report. In larger reports, a table of contents should be furnished also.

The statement of the Medical Officer of Health

No part of a report is of greater value than the statement, carefully prepared, of the health officer, outlining the major features of the health situation during the year, making known the accomplishments and the disappointments of the department. In his statement he has the opportunity of visualizing to the readers the important health problems of the community, and of presenting at the same time plans for meeting these needs, with specific recommendations, including the estimated cost of implementing the proposals. There must be the appreciation of the problems by the health officer before it can be expected that the citizens of the municipality will know of the needs and adequately support the department. It is only when the health officer takes stock of the local situation by a careful study of the morbidity and mortality returns and from his first-hand knowledge of conditions, that such a defining of the problems can be accomplished. Granted

that the health officer sees clearly the major health problems, how are the citizens to know these facts, particularly if they are embodied in dry figures in a more or less standardized statistical report? Such a dry statistical uniform report will not stir a local board of health to action. Rather, it will satisfy them that a very considerable amount of work has been carried out in sanitary inspection, in the control of nuisances, in quarantine, etc., and that the list of communicable diseases contains no startling increases in incidence, no striking epidemics, and that the health of the people has been very good. How can the board analyse the deaths into those that were preventable and those that were not—those that should have occurred and those that should not, or relate certain of those deaths to possibly a bad environment, home contacts, contaminated milk or polluted water? How can they be expected to realize that the infant death rate was unnecessarily high, that if the same rate of certain communicable diseases had pertained in a large city as pertained in their community, the province would be stirred by the magnitude of the epidemic? It is the responsibility of the health officer to lay before the people, in a clear, simple manner, the true health picture of the community and to inform them what needs to be done to improve and safeguard their health during the coming years. The annual report affords the opportunity.

Brief reports of various divisions

(a) VITAL STATISTICS.—In reading the reports of many municipalities, one is impressed by the lack of appreciation of what may be considered essential statistical data. There are usually statements as to the number of births, stillbirths, infant deaths and general death rate, but these are not always presented in a form for ready use. In many reports, two or three pages are utilized in presenting the list of deaths in accordance with the International List, which detailed information is of little or no interest to the average reader of the report, being simply a list of medical terms. It is desirable that, as far as possible, the statistical data presented be capable of ready comparison with previous years by the inclusion of the data for the preceding year at least. In Ontario, the form used by the Provincial Department for the annual report condenses the vital statistics into two tables, the first dealing with births, stillbirths and deaths, and the second with communicable diseases (cases and deaths by age groups).

In considering the essential data which should be included, there is agreement among those preparing municipal health reports that the general death rate, general birth rate, the causes of death, infant mortality and reported cases and deaths of communicable diseases be included. There is, however, no agreement as to the form of the presentation of this statistical data—whether it should be presented in detail or summarized, in order to bring out the public health lessons contained therein. The following tables are suggested:

(1) *Summary table of births, deaths, stillbirths and marriages.*—A table showing population, births (number and rate per 1,000 population), deaths

(number and rate per 1,000 population), stillbirths (number and rate per 1,000 births) and marriages (number and rate per 1,000 population), with comparative figures for at least five years, preferably ten years, should be supplied.

(2) *Causes of death.*—The use of the Abridged International List (1929), containing only 43 rubrics instead of 205, is recommended. This list is as follows:

Abridged International List of Causes of Death
1929

- | | |
|--|---|
| 1. Typhoid and paratyphoid fever. | 24. Diseases of the heart. |
| 2. Exanthematic typhus. | 25. Other diseases of the circulatory system. |
| 3. Small-pox. | 26. Bronchitis. |
| 4. Measles. | 27. Pneumonias. |
| 5. Scarlet fever. | 28. Other diseases of the respiratory system (tuberculosis excepted). |
| 6. Whooping cough. | 29. Diarrhoea and enteritis. |
| 7. Diphtheria. | 30. Appendicitis. |
| 8. Influenza. | 31. Diseases of the liver and biliary passages. |
| 9. Plague. | 32. Other diseases of the digestive system. |
| 10. Tuberculosis of the respiratory system. | 33. Nephritis. |
| 11. Other forms of tuberculosis. | 34. Other diseases of the genito-urinary system. |
| 12. Syphilis. | 35. Puerperal septicæmia. |
| 13. Malaria. | 36. Other diseases of pregnancy, childbirth and the puerperal state. |
| 14. Other infections and parasitic diseases. | 37. Diseases of the skin and cellular tissue, and of the bones and organs of locomotion. |
| 15. Cancer and other malignant tumours. | 38. Congenital debility and malformations, premature birth and other diseases of early infancy. |
| 16. Tumours, non-malignant tumours. | 39. Senility. |
| 17. Chronic rheumatism and gout. | 40. Suicide. |
| 18. Diabetes mellitus. | 41. Homicide. |
| 19. Alcoholism (acute and chronic). | 42. Violent or accidental deaths (suicide and homicide excepted). |
| 20. Other general diseases and chronic poisonings. | 43. Cause of death not specified or ill-defined. |
| 21. Progressive locomotor ataxia and general paralysis of the insane. | |
| 22. Cerebral hæmorrhage, cerebral embolism and thrombosis. | |
| 23. Other diseases of the nervous system and of the organs of special sense. | |

From the list there would be omitted in the report those rubrics for which no deaths were reported.

The arrangement of the causes of death in related groups, as for example, organic heart disease, diseases of the arteries, cancer (all forms), tuberculosis (all forms), pneumonia (all forms), nephritis, maternal deaths, infant deaths, external causes, etc., is of very definite value in showing the public health problem presented by each and in this form the layman can appreciate the statistical data.

The total number of deaths reported for each cause or group of causes should be stated and expressed as the rate per 100,000. Expressing the number as a percentage of the total number of deaths may be used with advantage, particularly when the causes are grouped. In cities over 25,000, the Committee on Administrative Practice of the American Public Health Association recommend that the deaths be classified by sex and age. There is no doubt that the fact that diphtheria was the chief cause of death in the age group of 2-14 years, or that tuberculosis was the chief cause of death in the age group 15-49 years, is more readily understood, means more to the readers and therefore creates more interest than a statement that the mortality rates were 10 and 70 per 100,000 respectively.

(3) *Infant mortality.*—A summary table is of value presenting the total number of living births, the total number of deaths under one year, and the rate per 1,000 living births, with similar data for the five preceding years.

As in the general list of causes of death, infant deaths can be presented

by specified causes or grouped in such a way as to emphasize the important causes, namely: diarrhoea and enteritis, pneumonia and other communicable diseases, prematurity, congenital debility, malformations and birth injuries, etc. A table showing the distribution of deaths by age will serve to draw attention to the toll of infant deaths in the first few weeks of life. Expressing each of these groups of causes as a percentage of the total number of infant deaths is most helpful and the giving of comparative data for 5 years adds to the value of the report.

(4) *Maternal mortality*.—In large centres of population the causes of maternal deaths may be presented in table form, with comparative data for previous years. Attention should be drawn, even in the reports of smaller municipalities, to the occurrence of any such deaths and advantage taken of the opportunity to further the health supervision of expectant mothers by their family physician.

(5) *Reportable diseases*.—In every report a table presenting the cases and deaths from the more common of these diseases as numbers and rates (per 100,000 population) should be included. A table can be prepared readily giving the cases and deaths of 8 or 10 of the more important of these diseases, with comparable data for the preceding 5 years. The inclusion of an average for 5 years for each cause is appreciated by readers. In large cities the use of tables in which the cases and deaths are given by months and by age and sex is of definite value. Inclusion of data, also, concerning hospitalization of communicable diseases is desirable. There might also be presented to advantage, when timely, an estimate of the cases of disease that had been prevented and lives saved by specific immunization.

The number of tables in the report will vary with the size of the municipality, the organization of the department and the available amount of money which may be spent on printing or mimeographing. The reduction in the cost of publishing statistical tables may be obtained by utilizing zinc cuts from typewritten proofs. Agreement by a representative committee of medical officers of health as to the form of these tables and as to essential data for varying sizes of municipalities would be helpful to health officers in the preparation of reports.

(b) *REPORTS OF OTHER DIVISIONS*—including communicable disease control, school medical inspection, public health nursing service, child hygiene, sanitary inspection, food control, laboratory, etc. In presenting the reports of each division, a suitable statement of the purposes and scope of the work should be included. A brief outline of the staff may be repeated, although this is given at the commencement of the report in an outline of the organization of the whole department. One value of the annual report is the stimulus which it is to the staff to keep careful and complete records of their work. Records lose much of their value if they are not used. To be used in measuring the value of the division's work and in planning for the future, the records must be analysed and tabulated. For the report, bearing in mind its purpose, there must be careful selection of the pertinent data and every effort made to present these in an easily understood and interesting

manner. Long lists of details, of visits or inspections should be condensed, using suitable headings to show clearly the nature of the work. The relative importance of the data presented should be the criterion in determining the amount of space to be devoted to any report. The report of any division should not be allowed greatly to exceed in length the report of another equally important division. The inclusion of one or more charts, including the organization of the whole department, the trend of the infant mortality rate, or the work of a division, adds to the interest of the report.

Financial Statement

The annual budget of the department is prepared by the health officer with the greatest care and the board of health and municipal officials are keenly interested in its content. If the budget has been prepared showing the divisions and sub-divisions of the organization, with the nature of the functions and activities of each division and the estimated cost of the work under items of personal services, supplies and equipment, the health officer can readily summarize the data for use in the annual report in a form which permits of comparison with other health departments.

Street cleaning, garbage and waste collection are not considered as functions of the health department. Grants to general hospitals and money for relief are often included in the budget of the health department. It is, therefore, practically impossible to make comparisons of the health department appropriations of various cities without detailed analysis. The action of the American Public Health Association in defining the services which should be considered as strictly health services has been valuable.

It is helpful, in this financial statement, to show the cost per capita of the entire services and, possibly, in the largest municipalities, the cost per capita of the various divisions or functions. The presentation of similar data for the preceding two, three or five year periods is appreciated, and a graph may be used to advantage. It is not necessary that a report be printed to be of real value. Several excellent reports of smaller cities in Canada appear in mimeographed form. Publication within at least 6 months of the close of the year is most desirable. The earlier the report appears, the greater is the interest in it.

These suggestions are offered with the hope that there may be a wider appreciation of the possibilities of the annual report. The Section of Vital Statistics of the Canadian Public Health Association might well take the initiative in this matter by naming a committee which would consider not only the presentation of the statistical data, but the composition of the whole report.

SUMMARY

The annual report offers a great opportunity to the medical officer of health to present to both officials and citizens the work of his department, its needs and how these can be more adequately met. Suggestions are offered in regard to the presentation of vital statistics and the work of other divisions of the department. The inclusion of a financial statement is recommended. The value of an agreement in regard to the general content of reports and to essential statistical data is stressed.

PROGRAMME

NINETEENTH ANNUAL MEETING

Ontario Health Officers' Association

*in conjunction with Ontario Dental Association and Public Health
Engineering Section, Canadian Public Health Association*

TORONTO, MAY 16-18, 1933

Convention Headquarters: ROYAL YORK HOTEL

Tuesday Morning, May 16th

9.00 a.m.—Registration.

10.00 a.m.—“Cyanide Fumigation”—Mr. H. E. Rothwell, Division of Industrial Hygiene, Department of Health, Ontario.

10.30 a.m.—Progressive Clinic—Demonstration of Dental Examination.

This will be in the nature of a progressive clinic and the members will be given tickets which will enable the different groups to follow through the entire series in proper sequence. (Direction of Drs. E. Guest and J. C. Lapp.)

Dr. W. C. Trotter—“Prevention of Dental Disease Through Periodic Examination.”

Dr. W. M. Seymour—“Impacted and Suppressed Teeth May Have a Bearing on Mental Health.”

Dr. M. A. Ross Thomas—“X-Ray Interpretation.”

Dr. E. W. Paul—“Better Understanding Between Physician and Dentist.”

Dr. A. D. A. Mason—“Gold Crowns and Large Restorations in Teeth are not Necessarily a Menace to Health.”

Dr. T. E. C. Butler—“Consequences of Extraction of One or More Teeth Without Restoration.”

Dr. Vernon Fisk—“Corrective Orthodontia.”

Dr. C. A. Corrigan—“Preventive Orthodontia.”

Dr. J. L. Stewart and Dr. L. A. Millburn—“Children Five to Six Years of Age.”

Dr. J. C. Livett and Dr. E. A. Grant—“Children Nine to Twelve Years of Age.”

12 noon—Appointment of Committees.

12.30 p.m.—Public Health Dental Luncheon.

12.30 p.m.—Luncheon—Public Health Engineering Section, Canadian Public Health Association.

Tuesday Afternoon

First General Session—2.30 p.m. Concert Hall.

(Joint Session with the Ontario Dental Association)

Chairman—Dr. J. W. Fraser, Kitchener, President, Ontario Health Officers' Association.

Greetings from S. A. Moore, D.D.S., President, Ontario Dental Association.

Address—The Honourable The Minister of Health.

“Mouth Manifestations of General Diseases”—George Young, M.D.

- "Lesions of the Mouth from a Dermatological Standpoint"—E. J. Trow, M.D.
 "Pathological Conditions in the Mouth in Relation to Their Effect on General Health"—Gordon Maclean, D.D.S.

Meeting of the Public Health Engineering Section, Canadian Public Health Association.

Chairman—Mr. G. H. Ferguson, Chief Engineer, Department of Pensions and National Health, Ottawa.

2.30 p.m.—"What Becomes of Sewage Discharged into Surface Waters"—Dr. G. G. Nasmith, Consulting Engineer, Toronto.

"Cross-Connections in Municipal Water Supplies of Ontario"—Mr. G. A. H. Burn and Mr. E. W. Johnston, Department of Health, Ontario.

"Algal Nuisances in Surface Waters"—Mr. Norman J. Howard, Director, Filtration Plant Laboratory, Department of Public Health, City of Toronto; and Dr. A. E. Berry, Director, Division of Sanitary Engineering, Department of Health, Ontario.

Tuesday Evening

6.30 p.m.—Health Officers' Round Table Conference at Dinner (Ball Room), Dr. J. W. Fraser presiding.

Wednesday Morning, May 17th

Joint Session with the Public Health Engineering Section of the Canadian Public Health Association.

Chairman—Dr. J. W. Fraser, Kitchener, President, Ontario Health Officers' Association.

9.30 a.m.—"Engineering Aspects of Milk Control"—Dr. A. E. Berry, Director, Division of Sanitary Engineering, Department of Health, Ontario.

10.00 a.m.—Symposium—"Sanitation in Relation to Processing."

(a) "Slaughter Houses"—Dr. A. R. B. Richmond, Department of Public Health, City of Toronto.

(b) "Creameries and Cheese Factories"—Mr. A. V. DeLaporte, Department of Health, Ontario.

(c) "Ice Cream Plants"—Mr. T. J. Lafrenière, Chief Engineer, Provincial Bureau of Health, Montreal.

(d) "Soft Drink Bottling Plants"—Mr. G. A. H. Burn, Department of Health, Ontario.

11.00 a.m.—"Cross-Connection Dangers in Plumbing"—Mr. G. H. Ferguson, Chief Engineer, Department of Pensions and National Health, Ottawa.

Wednesday Afternoon

Second General Session.

Chairman—Dr. J. W. Fraser, Kitchener, President Ontario Health Officers' Association.

2.30 p.m.—Presidential Address—Dr. Fraser.

3.00 p.m.—"Treatment and Prevention in the Light of Experience"—A. J. Mackenzie, M.D.

3.30 p.m.—"Smoke Abatement"—Mr. N. MacNicol, Commissioner of Works, Forest Hill Village.

4.00 p.m.—"Rural School Sanitation"—Mr. W. C. Millar, Chief Sanitary Inspector.

Wednesday Evening

Joint Session with the Ontario Dental Association.

7.30 p.m.—Dinner (Concert Hall).

"Some Recent Observations in Central Europe"—Norman Sommerville, K.C.

Thursday Morning, May 18th

9.30 a.m.—"The Present Status of Diphtheria Immunization"—Dr. A. L. McKay, Department of Health, Ontario.

10.00 a.m.—"Prevention of Crippling in Poliomyelitis"—Dr. N. H. Sutton, Department of Health, Ontario.

11.30 a.m.—Reports of Committees:

(a) Nominating Committee. (b) Resolutions Committee.

Programme

SECTION OF PUBLIC HEALTH ENGINEERING CANADIAN PUBLIC HEALTH ASSOCIATION

Royal York Hotel, Toronto

May 16th and 17th, 1933

THE Section of Public Health Engineering of the Canadian Public Health Association will hold its annual meeting in the Royal York Hotel, Toronto, on May 16th and 17th. At the same time the Ontario Health Officers' Association will be in session and the Section is sponsoring a joint programme on Wednesday, May 17th.

TUESDAY, MAY 16th

12.30 p.m.—Opening luncheon.

2.30 p.m.—Section Meeting.

Chairman—Mr. G. H. Ferguson, Chief Engineer, Department of Pensions and National Health, Ottawa.

"What Becomes of Sewage Discharged into Surface Waters"—Dr. G. G. Nasmith, Consulting Engineer, Toronto.

"Cross-Connections in Municipal Water Supplies of Ontario"—Mr. G. A. H. Burn and Mr. E. W. Johnston, Department of Health, Ontario.

"Algal Nuisances in Surface Waters"—Mr. Norman J. Howard, Director, Filtration Plant Laboratory, Department of Public Health, City of Toronto; and Dr. A. E. Berry, Director, Division of Sanitary Engineering, Department of Health, Ontario.

Election of Officers. General Business.

6.30 p.m.—Round Table Conference at Dinner—Joint Session with the Ontario Health Officers' Association.

WEDNESDAY, MAY 17th

9.30 a.m.—Joint session with the Ontario Health Officers' Association.

"Engineering Aspects of Milk Control"—Dr. A. E. Berry, Department of Health, Ontario.

Symposium, "SANITATION IN RELATION TO PROCESSING"

(a) "Slaughter Houses"—Dr. A. R. B. Richmond, Department of Public Health, City of Toronto.

(b) "Creameries and Cheese Factories"—Mr. A. V. DeLaporte, Department of Health, Ontario.

(c) "Ice Cream Plants"—Mr. T. J. Lafrenière, Chief Engineer, Provincial Bureau of Health, Montreal.

(d) "Soft Drink Bottling Plants"—Mr. G. A. H. Burn, Department of Health, Ontario.

"Cross-Connection Dangers in Plumbing"—Mr. G. H. Ferguson, Chief Engineer, Department of Pensions and National Health, Ottawa.

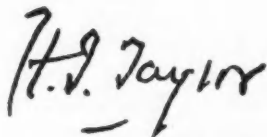
3.30 p.m.—"Smoke Abatement"—Mr. N. MacNicol, Commissioner of Works, Forest Hill Village.

Canadian Public Health Association

TWENTY-SECOND ANNUAL MEETING

SAINT JOHN, N.B., JUNE 19-21, 1933

On behalf of the province of New Brunswick, I desire to extend a most cordial welcome to every member of the Association and to express the hope that this, the twenty-second annual convention, may be most successful in meeting the pressing problems in public health and in advancing the interests of preventive medicine throughout the Dominion.



Minister of Health.

IN these words a hearty welcome is extended to the Association and its members and the importance of the meeting stressed by the Honorary President.

During the week of June 19th the Canadian Medical Association will also be in session in Saint John. Our Association is holding its sessions on Monday, Tuesday and Wednesday, June 19th, 20th and 21st, while business meetings of the Canadian Medical Association will occupy Monday and Tuesday, their programme commencing on Wednesday. It is hoped that members of the Medical Association will take advantage of this arrangement by attendance at our sessions on these two days.

Eleven years ago the Canadian Public Health Association held its annual meeting in Saint John, a meeting remembered as one of the most representative and enthusiastic ever held by the Association. New Brunswick was the first province to have a Minister of Health and reports of the early progress were presented at that meeting. At the twenty-second annual meeting, consolidation of the great gains made in public health, not only in New Brunswick but throughout Canada, will be recorded, particularly in the field of tuberculosis. One of the general sessions will be devoted to this disease, when papers will be presented by Sir Humphry Rolleston, Col. S. Lyle Cummins, Dr. W. J. Bell, Dr. F. C. Middleton and Dr. R. J. Collins. The importance of cancer as a medical problem will be discussed not only by the Canadian Medical Association, but one general session of our meeting will be devoted to consideration of the problem from the standpoint of the state. Dr. Joseph Colt Bloodgood of Baltimore, the Hon. Dr. Robb and the Hon. Dr. Murphy will present this subject. Without question, the programme is one of the most attractive that the Association has ever prepared.

DIRECTORY OF SESSIONS

- Monday, June 19th:** 11.00 a.m.—Registration.
 2.30 p.m.—General Session.
 8.00 p.m.—Meeting of the Executive Council.
- Tuesday, June 20th:** 9.15 a.m.—Section of Vital Statistics.
 —Section of Public Health Nursing.
 2.30 p.m.—General Session.
- Wednesday, June 21st:** 9.15 a.m.—Section of Vital Statistics.
 —Laboratory Section.

CONVENTION HEADQUARTERS



The Admiral Beatty Hotel, shown above, will be headquarters for the meeting. The general sessions will take place in the auditorium of the Saint John High School, which is located near by, while the Section meetings will be held in the Hotel and in the High School.

TRANSPORTATION ARRANGEMENTS

The Canadian Medical Association has made arrangements using the Identification Certificate Plan for its members; this gives the round-trip on the basis of one fare and a third. Since it is the purpose of the Canadian Medical Association to send identification certificates to each of its members, and as a great many of our members will receive a certificate in this way, it has been considered best to ask our members who desire such certificates to write to the General Secretary, Dr. J. T. Phair, East Block, Parliament Buildings, Toronto 5. For details of limitation as to routes, dates of sale, return limit and territory, members are also requested to write to the General Secretary. Summer Tourist fares are also available and are cheaper from points in the far West than the Identification Certificate Plan.

LOCAL COMMITTEE IN CHARGE OF ARRANGEMENTS

<i>Dr. H. L. Abramson, Chairman</i>	<i>Dr. J. M. Cameron, Secretary</i>
<i>Dr. C. L. Emerson</i>	<i>Hon. Dr. Wm. F. Roberts</i>
<i>Dr. R. W. Grant</i>	<i>Dr. L. MacPherson</i>
<i>Miss H. S. Dykeman</i>	<i>Miss A. A. Burns</i>
	<i>Dr. R. J. Collins</i>
	<i>Dr. C. W. MacMillan</i>
	<i>Mrs. M. V. Edwards</i>

Programme

TWENTY-SECOND ANNUAL MEETING

CANADIAN PUBLIC HEALTH ASSOCIATION

Saint John, N.B., June 19-21, 1933

CONVENTION HEADQUARTERS: THE ADMIRAL BEATTY HOTEL

Sessions will be held in the Hotel and in the auditorium of the
Saint John High School

EXECUTIVE COUNCIL SESSION: MONDAY, JUNE 19TH, 8.15 P.M.

FIRST SESSION

General Meeting of the Association

Auditorium, Saint John High School

Monday, June 19th, 2.15 p.m.

Address of Welcome—The Hon. H. I. Taylor, M.D., Minister of Health, New Brunswick, and Honorary President of the Association.

Presidential Address—Dr. Wm. Warwick, Chief Medical Officer and Registrar-General, New Brunswick, and President of the Association.

Symposium, "CANCER AS A PUBLIC HEALTH PROBLEM"

The Hon. G. H. Murphy, M.D., Minister of Health, Nova Scotia.

The Hon. J. M. Robb, M.D., Minister of Health, Ontario.

Dr. Joseph Colt Bloodgood, Baltimore, Maryland.

SECOND SESSION

Public Health Nursing Section

Tuesday, June 20th, 9.15 a.m.

Chairman—Miss Huilota Dykeman, Director, Public Health Nursing Service, Department of Health, New Brunswick.

"SUPERVISION IN PUBLIC HEALTH NURSING"—Its value from the point of view of

- (1) The Staff Nurse
 - (a) The urban centre
 - (b) The rural community
- (2) The Supervisor
- (3) The Medical Officer of Health.

Election of Officers.

Vital Statistics Section

Tuesday, June 20th, 9.15 a.m.

Chairman—Dr. Paul Parrot, Statistician, Provincial Bureau of Health, Quebec.

"Sex Differences in Mortality after the First Year of Life"—Dr. John Wyllie, Professor of Preventive Medicine, Queen's University, Kingston, Ontario.

"The Form of the Medical Certificate"—Mr. T. E. Ashton, Statistician, Department of Public Health, City of Toronto.

"Methods of Estimating the Population of Montreal City"—Dr. Eugene Gagnon, Superintendent, Division of Vital Statistics, Department of Health, City of Montreal.

"The Rules Under Which Choice of Causes of Deaths is Made in the Dominion Bureau of Statistics"—Mr. E. S. Macphail, Chief, Division of Census and Vital Statistics, Dominion Bureau of Statistics, Ottawa.

"Mortality from Tuberculosis in Ontario, 1900-1931"—Miss Mary Ross, M.A., Department of Epidemiology and Biometrics, School of Hygiene, University of Toronto.

THIRD SESSION

General Meeting of the Association

Tuesday, June 20th, 2.30 p.m.

Auditorium, Saint John High School

Chairman—Dr. Wm. Warwick, Chief Medical Officer and Registrar-General, New Brunswick.

"The Health Organisation of the League of Nations"—Dr. J. G. FitzGerald, Dean of the Faculty of Medicine and Director of the Connaught Laboratories and School of Hygiene, University of Toronto.

"Tuberculosis in Native (Aboriginal) People"—Prof. S. Lyle Cummins, Institute of Preventive Medicine, Cardiff, Wales.

"Rehabilitation of the Tuberculous as Illustrated by Papworth Village Scheme"—Sir Humphry Rolleston, Cambridge, England.

"CANADIAN PROGRESS IN THE CONTROL OF TUBERCULOSIS":
Saskatchewan—Dr. F. C. Middleton, Deputy Minister of Health.

Ontario—Dr. W. J. Bell, Deputy Minister of Health.

New Brunswick—Dr. R. J. Collins, Saint John.

FOURTH SESSION

Laboratory Section

Wednesday, June 21st, 9.15 a.m.

Chairman—Dr. Norman MacL. Harris, Chief, Laboratory of Hygiene, Ottawa.

"A Comparison of Chocolate Tellurite Medium with Loeffler's Blood Serum for the Diagnosis of Diphtheria"—Dr. W. B. McClure, Division of Laboratories, Department of Health, Ontario.

"Municipal Meat Inspection"—Dr. Arthur Wilson, Medical Health Officer, Saskatoon, Saskatchewan.

"The Combined Dark Field Outfit in the Early Diagnosis of Syphilis"—Dr. A. L. McNabb, Department of Health, Ontario.

"Laboratory Examinations of Milk in the Diagnosis of Bovine Mastitis"—Dr. J. M. Rosell, Chief of the Department of Bacteriology, Institut Agricole d'Oka, Oka, Quebec.

"The Newer Knowledge of Ventilation"—Dr. R. Vance Ward, Department of Public Health and Preventive Medicine, McGill University, and The Industrial Clinic, Montreal.

"The Schick Test"—Dr. Donald T. Fraser and Dr. Neil E. McKinnon, School of Hygiene and Connaught Laboratories, University of Toronto.

Election of Officers.

Vital Statistics Section

Wednesday, June 21st, 9.15 a.m.

Chairman—Dr. Paul Parrot, Statistician, Provincial Bureau of Health, Quebec.

"Tuberculosis in Canada from 1921 to 1931"—Dr. R. E. Wodehouse, Executive Secretary, Canadian Tuberculosis Association, Ottawa.

"A Year's Experience with the Proposed Form for Registration of Stillbirths"—Dr. Paul Parrot, Statistician, Provincial Bureau of Health, Quebec.

"Some Health Factors in Infant Mortality"—Miss A. B. Baird, Canadian Council on Child and Family Welfare, Ottawa.

"After-Treatment in Poliomyelitis"—Dr. T. B. Acker, Halifax.

"Findings in the Physical Examination of 900 University Students"—Dr. H. G. Grant, Dean of the Faculty of Medicine and Professor of Public Health, Dalhousie University, Halifax.

"Maternal Mortality in Manitoba: A Five-Year Survey"—Dr. F. W. Jackson, Deputy Minister of Health, Manitoba, and Dr. R. D. Defries, School of Hygiene, University of Toronto.

Reports of Committees:

(a) Report of the Committee on the Annual Report of the Medical Officer of Health.
Chairman—Dr. D. V. Currey, Medical Officer of Health, St. Catharines, Ontario.

(b) Report of the Committee on Non-resident Births and Deaths.

Chairman—Mr. T. E. Ashton, Statistician, Department of Public Health, City of Toronto.

EDITORIALS

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QUEBEC MOVES FORWARD

PUBLIC health legislation of a very advanced character has just been passed by the Legislature of the Province of Quebec. In a bill introduced by the Honorable Mr. David entitled "An Act Respecting Health Units" it is provided that "The health units established under the Act 18, George V, chapter 69, and its amendments, shall, from the coming into force of the present Act, become permanent health organizations having for their object the supervision and the protection of the public health in the counties in which they are established."

It is further provided that "The Lieutenant-Governor-in-Council may, whenever he deems it expedient, establish, on the recommendation of the Provincial Secretary, in the counties or groups of counties not yet benefitting from the same, public health services formed by means of health units similar to those contemplated by section 2, so that the rural and semi-urban part of the Province may be entirely provided therewith."

Two other clauses in the Act are also of great interest. Section 12 sets out, "The county health units shall be under the direction and control of the Director of the Provincial Bureau of Health who may delegate any official of the said Bureau to supervise them, and who, for the internal government thereof, may make such rules as he may deem expedient." Finally, "The Provincial Secretary is charged with the carrying out of this Act."

These are great gains in the extension of whole-time public health organizations in the rural and semi-urban sections of the Province of Quebec. In a period of seven years, twenty-eight new whole-time public health units have been created and placed under the direction of fully qualified physicians who in addition have received the public health qualification, namely, the Diploma in Public Health. Such progress is unique on the North American continent and quite probably without parallel elsewhere. Readers of the article by Dr. Lessard entitled "Rural Sanitation in Quebec from the Provincial Standpoint," which appeared in the March, 1932, number (Vol. XXIII, No. 3) of the JOURNAL will recall that at that time there existed twenty-seven health units representing thirty-three counties (including towns) providing full-time health service for a population of nearly 900,000 people, or

more than 50 per cent of the population liable to be organized under the Health Unit System. As recently further extended, an additional county has been added to the already impressive total.

Of the many opportunities for engaging more effectively in the conduct of public health work when the local unit of organization is suitably staffed with trained personnel, the campaign against diphtheria, depicted in such an interesting way by Dr. A. R. Foley in the April issue of the JOURNAL, is a suitable illustration. It is there shown that the morbidity rate for diphtheria among the population of the health units was 24.8 per 100,000 of population whereas that elsewhere in Quebec was 56.4 per cent. Since it is exceedingly important for further progress in organized public health work to have incontrovertible statistical evidence to support the contention that whole-time public health service with trained persons in charge of the work is better than any other variety, it is gratifying to realize that such evidence is being steadily accumulated in these health units in Quebec. The general death rate in them, as well as the infant mortality rate, is lower than in the districts in the province generally.

This latest accomplishment in the Province of Quebec will doubtless be a source of inspiration to many other communities. It is a matter of pride and gratification to all those genuinely interested in public health progress in the Dominion of Canada. Warmest congratulations are extended to the Honorable Mr. David and to Dr. Lessard and to their colleagues and associates.

J. G. FitzGerald.

RETIREMENT OF DR. AMYOT

AFTER nearly fourteen years as Deputy Minister, first of National Health, and more latterly of Pensions and National Health, Dr. John A. Amyot retired from his office on March thirty-first, 1933. The position which he has just vacated he has held since its creation in 1919.

Dr. Amyot's association with the public health field, however, dates back to a much earlier period. From 1900 until 1919 he was one of the leading spirits and guiding hands in the Provincial Department of Health of Ontario and actively associated with the teaching of pathology, bacteriology and public health in the University of Toronto. Very few of Dr. Amyot's contemporaries exercised a wider influence in their chosen field than did he during a period of nearly forty years. In pathology and bacteriology, and in every branch of modern public health and preventive medicine Dr. Amyot has for many years spoken with authority.

A host of friends from the Atlantic to the Pacific will greatly regret that continued ill-health has necessitated his retirement at this time. All will be united in the wish that his health may soon be much improved and that he may long be spared to enjoy a well earned leisure and opportunity for the cultivation of his many other interests.

J. G. FitzGerald.

PUBLIC HEALTH NURSING

"The Public Health Nurse"*

Summary of the Chapter from Dr. G. M. Weir's *Survey of Nursing Education*

MARGARET L. MOAG, REG.N., Montreal

IN presenting a review of this chapter from the *Survey of Nursing Education*, it is very interesting to note that ninety per cent of the public health nurses of Canada participated in the *Survey* through replies to the questionnaires submitted, or through attendance at meetings and conferences held by Dr. Weir. It is gratifying to learn that so much practical interest has been taken by the group.

From statistical evidence presented, we learn that there is a much smaller number of nurses from the agricultural communities than in either of the private duty or institutional groups. No doubt the directors of public health organizations have been concerned chiefly in an endeavour to obtain nurses with education, good hospital training, post graduate training in public health nursing, or equivalent experience, while family background has not entered into the requirements; but the *Survey* offers the suggestion that nurses from agricultural communities should be of more value in the rural field of public health, especially as they would be more likely to have an understanding of the social problems found therein, and might "fit in" better than would nurses from the business and professional classes.

Reference is made to the very great need for public health nurses in the rural field in any capacity in which they may be called upon to serve. One cannot fail to be impressed by this suggestion, for it is generally recognized that our young nurses do not appear to be imbued with the pioneer spirit necessary to endure nursing the sick under perhaps trying conditions, or maternity service where emergency

night work is demanded, in addition to other health work which their programme entails. This is frequently necessary when demonstrating the need for specialized services which will eventually follow. Tribute is paid to the work of the Victorian Order of Nurses and the Red Cross, and the *Survey* states that "No patriot could ask for greater opportunity to serve his country than is given to these young public health missionaries and teachers in rural and urban Canada."

INCOME AND SAVINGS

The section which deals with this subject gives us some illuminating data, as we learn that the total income of the middle fifty per cent is between \$1,331 and \$1,690, allowing an average of \$600 for living expenses. In our opinion this would be a minimum figure for living expenses in our larger cities, unless the nurse lived at home, or under crowded conditions in apartments with others, where she would have to resort to housekeeping which would include the preparation of meals after a fatiguing day in the district.

Only forty per cent of the public health groups had saved \$400, or little more, from their year's salary, and the amount saved by the average public health nurse since she began her nursing career was \$1,006. Many, of course, have had to assume family responsibilities.

Nurses are living in hope that some method of superannuation may be devised; in the face of such information the outlook is not a happy one for the public health nurse who may wish to retire, or who may be forced to do so on account of illness or inability to carry on.

*Presented before the Section of Public Health Nursing at the 21st Annual Meeting of the Canadian Public Health Association, Toronto, May, 1932.

From the questionnaire submitted it was ascertained that the public health groups are apparently happier in their work than the other groups. Satisfaction is due to regular hours on duty, assured income which allows vacation salaries, sick leave when necessary, and enlightened leadership with opportunity for staff education, particularly in the larger organizations.

The attitude of the majority of doctors to the public health nurse was less favourable than to the institutional nurse, but it is pointed out that the attitude to the public health nurse of the leaders in the medical profession could scarcely be more favourable. This is no doubt due to the better understanding of the potentialities of preventive work in the programme of the public health nurse in any community.

SCHOOL AND COMMUNITY

In introducing the results of the study of this subject, the *Survey* refers to the well-known fact that conditions in each province are vastly different and that it is obvious that each must work out its own health salvation in the light of its social philosophy and in terms of its own needs and resources.

That health education should begin in our schools is one of the first principles to be applied in any locality, and the mutual understanding and co-operation of the home and teachers' training institutions must be obtained. It is noted that a health conscience, both individual and community, is being developed and its future success will depend upon the public health nurse. Here the taxpayer must of necessity be taken into consideration, but in the judgment of the *Survey* the saving to the province and to communities as a result of decreased illness through health education would more than offset the cost of the public health services involved.

Normal Schools

The *Survey* suggests that health

instruction be given to student teachers in Normal schools so that they may acquire enthusiasm and sufficient elementary yet fundamental information to enable them to conserve the health of their pupils; and it is further recommended that a public health nurse who has had successful teaching experience and understanding of educational problems, and possessing applied personal knowledge of rural and urban sociology, should be appointed to give this instruction in the Normal schools. A teacher so trained would be competent to give instruction in elementary hygiene, and the nurse would be enabled to divide her time among school, clinics and home visits to much better advantage.

In connection with the economic aspect of public health work, the *Survey* refers to the high cost of illness and the growing demand for health insurance which, it is believed, will soon become a reality in Canada. Sound economy in health matters cannot afford longer to neglect the real sources for the solution of the public health problem; the necessity of clinics for pre-natal and pre-school children, of the education of parents and other adults in health matters, and of the schools for education in health habits and ideals.

TWO SCHOOLS OF THOUGHT

The *Survey* has ascertained the knowledge that two schools of thought regarding the scope and nature of public health work exist in Canada. These are classed as schools "A" and "B," the former believing that public health work should be limited to the educational and preventive side of applied medicine, leaving nursing care of the sick to a group engaged for that specific purpose.

School "B" is of the opinion that it is not possible to draw any line of demarcation between preventive and curative medicine, and that a nurse may carry on educational work, work in health centres and school work, in addition to giving nursing care to the

sick. This programme is being carried out by the Victorian Order of Nurses and the Red Cross in many communities in Canada, and it is reasonable to assume that preventive and curative work must go hand in hand until finances and personnel are forthcoming for specialized services.

The majority of the public health groups emphatically stated that there should be more theory in the training schools, and many deplored their ignorance of psychology and mental hygiene. No one has a greater opportunity to discover wrong attitudes in the home than the public health nurse, but if she has not a working knowledge of mental hygiene she is seriously handicapped in attacking these problems which may need urgent solution.

GROUP AND HOURLY NURSING

Questionnaires concerning the subject were submitted to the public health group as well as to the institutional and private duty nurses. The majority, or eighty per cent of the public health nurses of Canada were in favor of hourly nursing, as many have had successful experience in their own organizations, while the same percentage voiced their approval of group nursing.

INFORMATION FROM DIRECTORS

Ten directors of public health nursing in charge of five hundred and one nurses reported that it was a very difficult matter to obtain the right type of nurse, but that there was no scarcity of unqualified applicants. There was little difficulty in retaining qualified nurses once they were appointed to the staff.

It was learned that, on the average, public health nurses welcomed supervision, where teaching and helpful advice were the ideas primarily involved in such supervision.

The majority of these directors reported that the nurses of the larger training schools proved to be more efficient in learning public health nursing than those of the smaller schools.

That there is a great shortage of well-qualified public health nurses in Canada was shown by the following:

Visiting nurse	20 per cent shortage
School nurse	20 per cent shortage
Victorian Order of Nurses	40 per cent shortage
Industrial nurse ..	80 per cent shortage
Others	20 per cent shortage

These figures demonstrate the existing need for more qualified public health nurses throughout Canada.

In the judgment of the *Survey*, public health authorities should endeavor to promote and maintain high standards, and any attempt to lower these standards, even during periods of unemployment, should be resisted, as it would be detrimental to the interests of the public as well as of the profession as a whole.

Mining and Industrial Centres

The urgent need for more public health nurses in certain mining and industrial centres in eastern Canada is stressed, as is the statement that more emphasis should be laid upon the preventive phases of public health work in these districts. Careful selection of industrial nurses who have had special preparation is essential, for in the majority of instances the work of the industrial nurse has been limited to "First Aid" for the worker, while little or no attention has been directed to his home or family.

RECOMMENDATIONS

There are ten recommendations suggested by the *Survey*:

1. As specialized training courses will eventually follow the development and recognition of specialized functions in public health nursing, graduated salary scales, conditioned by training and experience, should be considered. Salaries comparable to those paid to specialists in high schools should be available for the higher grade of public health service.
2. Minimum qualifications for the public health nurse are recommended as follows:
 - (a) Junior matriculation or its equivalent (not defined).
 - (b) Completion of a three years' course in general nursing in an approved training school.
 - (c) At least one year of successful experience in private duty or institu-

tional nursing, preferably the former. May we add that private duty experience should not be limited to specializing in hospital, as experience in private homes is vitally necessary to the nurse who contemplates entering the public health field.

- (d) The completion of the one-year course in public health nursing in a recognized university; or, in lieu of three years in training school and post graduate year in university, the four or five year course in public health nursing offered by Canadian and other universities, when it is available.

- (e) A six months' probation period under careful supervision before appointment to the regular staff.

It is also suggested that it would be advisable for the prospective public health nurse for the rural field to spend a period of six months, under supervision, in a small rural or village centre, as nurses from the city need new orientation for work in rural communities before being placed on their own initiative and responsibility.

3. In the training of all nurses, and particularly public health nurses, more emphasis should be placed on mental hygiene and sociology (rural and urban).
4. "Refresher courses" for a period of one month every three or four years. Full salary should be paid while taking these courses, which should not conflict with their regular vacations. The education of all lay committees will be necessary to allow for these refresher periods in budgeting yearly appropriations, particularly in the larger organizations. Refresher courses should be made available in Canada and publicized, so that public health organizations may know where application may be directed.
5. Nurses who have had teaching experience should be given preference in appointments for public health work.
6. Public health nurses, as well as all other graduate nurses, should co-operate with the medical profession, hospitals and laity, in giving hourly and group nursing a fair trial.
7. A text book on the principles and practice of supervision in public health nursing should be provided for the guidance of directors and supervisors of public health is recommended, with the suggestion that one-third to one-half of its content deal

with the problem now confronted by Canadian nurses actively engaged in public health work.

8. Racial groups in Canada should be provided with public health nurses of their own nationality who understand their customs and attitudes. As it is difficult for these groups to obtain training, the *Survey* recommends that the Federal Government defray the major portion of the cost of training these nurses. It is obvious that if this group is neglected the interests of the Canadian people at large may be endangered.
9. Attention is directed to the lack of public health nurses in the Maritime provinces, and emphasis is given to the fact that neglect of adequate public health services is an uneconomical and shortsighted policy. It is recommended that in the immediate health interest of all Canadians, the number of public health nurses in Canada should be doubled in the next five or ten years.
10. It is also recommended that the Department of Education and the Department of Health in Ontario seriously consider the appointment of a medical specialist with pedagogical training and teaching experience, to develop and co-ordinate the work in health education in the Normal schools of that province. In the judgment of the *Survey* the Normal school is the most strategic educational centre for the spreading of desirable health attitudes, ideals and information to the community. It is reasonable to suppose that other provinces would follow Ontario's experiment.

In closing, I would like to refer to a statement in the chapter *The Nurse and the Medical Profession*:

"If indeed any one type of nurse is to be selected on account of her superior qualities and special abilities, she should, in the judgment of the *Survey*, be the public health nurse. Possibly she will be known as the public health teacher, having had first, broad academic education with training in educational psychology, her hospital training, and a practical knowledge of mental hygiene sociology and method. In addition, she must have a refined, intelligent, sympathetic and attractive personality, if she is to lure to brighter health worlds, and lead the way."

LABORATORY SECTION

*Examination of Pathological Material Removed at Operation**

JAMES MILLER, M.D., F.R.C.P. Ed.

Professor of Pathology, Queen's University, Kingston, Ontario.

THE examination by a competent pathologist of material removed by the surgeon is now part of the routine of all properly conducted hospitals. Formerly the surgeon concerned was content with the occasional investigation of specimens which puzzled him, and for these only did he ask the pathologist's help. This is not now regarded as sufficient; and in consequence all specimens from the operating room are subjected to gross and, in many cases, to microscopic examination. Much of this work may be a ploughing of the sands, but records of such examinations often assume unexpected importance when the patient returns to hospital after months or years.

In many hospitals there are no means for doing this; hence the necessity for despatching the material in containers to some central laboratory where there is a pathologist and facilities for section cutting. For some years now the material removed at operations in the province of Alberta has been sent to the pathological department of the University of Edmonton for investigation. At first, as I understand, this material included tonsils and adenoids as well as appendices, gall bladders, tumours, etc. Now, however, the tonsils and adenoids have been dropped by common consent. In 1929 the Minister of Health of the Province of Ontario offered examination of such material under the auspices of the Department of Pathology of the University of Toronto at the rate of a dollar a specimen, outfits being supplied free of charge. Similar diagnostic service is

carried out by central laboratories in this country, in Europe, and in the United States, in connection with groups of hospitals and cancer clinics.

Having been connected with this type of work for some thirty years and having seen the development of the organization through all its various stages, I may be permitted to offer observations on the question in some of its practical aspects.

The Pathologist

A pathologist, for the purposes under consideration, cannot be trained in a matter of months. True, after attending a class of morbid histology, most students can be taught to recognize the difference between an adenoma and a carcinoma, between an acute inflammatory process and a tuberculous or luetic one. But a pathologist, to be of real use to a group of operating surgeons, must be equipped far beyond this. Although tumours may be classified into certain fairly well defined types, the gradation within the types is unending. Diagnosis of neoplasms is not like the identification of an organism, a question of behaviour in sugar media or response to agglutinating sera—well defined and clear cut reactions. It is a matter of experience acquired by long practice and careful observation. Is a cell proliferation regenerative, simple neoplastic, malignant or borderline? Should a given breast condition be dealt with by local excision or by removal of the entire gland or by a complete Halstead? About such matters the tyro can say little except to repeat what he culls from

*Presented before the Laboratory Section at the 21st Annual Meeting of the Canadian Public Health Association, Toronto, May, 1932.

books and such information is never the equivalent of personal experience.

Still further in this relation, having started on his career as a reporting pathologist he can better his mental equipment and his consequent value to the clinician only by carefully correlating clinical and pathological information. The proper source of the clinical information is, of course, the surgeon himself. "Oh wad some poerer the giftie gie us to see oursels as ithers see us." It would be a revelation to many, I won't say to all, operating surgeons to realise what the pathologist, who is in the habit of investigating the material he removes at operation, really thinks of him. Sometimes the pathologist has to start right away and attempt to find out what part of the body the specimen comes from; sometimes the information, when present, is actually misleading. This may not be the surgeon's fault. The misleading information or the complete absence of information may be due to the negligence of some nurse or orderly entrusted with the filling in of forms. But here let me plead with the surgeon to fill in his own forms, or at any rate, personally to superintend the process. The fact of the matter is that the clinician gets out of a scientist—pathologist, bacteriologist or biochemist, as the case may be—just in proportion to that which he puts in. If he adopts the attitude, "Here is a problem for you, make what you can of it! I'm not going to prejudice you;" or if he writes, as I have actually seen written across a questionnaire on a Widal outfit, "Mind your own business," he will get some information, but it will often be imperfect and sometimes it will be misleading. If, however, he will take the trouble to sit down after his morning's operations and dictate or write out short accounts of his side of the matter, perhaps with rough sketches of the specimens, the doubtful areas being defined, then he may be surprised at the wealth of assistance he will get.

Let us now consider in what form and how should the material arrive at the pathologist's bench. This is a matter of no particular difficulty when the pathological department is part of the hospital itself. Such is, of course, the ideal situation. The closer the connection between the pathologist and the operating room or ward, as the case may be, the better. In many cases he should be called in consultation before anything is done. Often it is sufficient to summon him to examine and pronounce upon the material as it is removed. Frequently he will subject the tissue to the arbitrament of the microscope by means of a "quick section." But with all this and much more concerning the relation between surgeon and pathologist I am not at present concerned. We are dealing with the question of the examination at some central laboratory of material removed in buildings distant many yards or many miles from the pathologist's bench.

Selection of Specimens

In the first place, what should be sent—the whole specimen or a selected portion thereof? The answer to this question depends mainly upon the characteristics of the surgeon who has removed it. If that surgeon has kept up his interest in his morbid anatomy, then he is the proper person to select the material for the pathologist to pronounce upon. Let us say it is breast which is under consideration. He knows, none better, what particular part of that breast was the doubtful portion, the relation of that part to the nipple and the pectoral muscle and (a most important point) he knows which axillary gland he felt most uncertain about. On the other hand when, as is often the case, the surgeon feels himself out of touch with these matters it is far better that the entire specimen—breast, thyroid, prostate, uterus or whatever it be, be sent intact for gross examination, selection of sample and section cutting. This is what I encourage neighbouring

hospitals to do when they send material to the Richardson Laboratory for report.

Sending of Specimens

What about containers? There is really no difficulty about this. The specimen or specimens (because a day's operative results can be sent all in the one parcel) are wrapped in gauze moistened in formaldehyde, they are again wrapped up in pieces of waterproof cloth, each is labelled and the whole placed in a card-board or other box and despatched by parcel post or express. It is, of course, of great importance that such material should reach the pathologist *quam celerime*. If long delayed *en route* a certain amount of autolysis will occur in unfixed tissues, especially if these be subjected to warmth, as in summer or in express freight cars. But (and this is a matter to which provincial hospital authorities and individual medical men pay far too little attention) it is a simple matter to find out the time to despatch the specimens so that the journey may be most expeditiously performed, and meantime the material can be kept cool. Moreover, local postal authorities should be instructed to pay special attention to and treat with care all pathological and bacteriological material. Their interest may be enlisted at both ends in such a way as to diminish considerably the stay of the container in the post bag or at the express office. This again we have found out by experience. One more point: let not the sender imagine that if he despatches the material on a Saturday it will miraculously reach the laboratory the same evening. It is again a simple matter to retain such specimens in dilute fixative or under refrigerative conditions over the week end. Careful watch should be kept by the despatching official upon the vagaries of the post on holidays as well as at week ends and when the change is made from standard to summer time.

With the material of lesser bulk, portions

of tumours, curettings, etc., the matter is much simpler. These can be placed at once in fixative within a suitable container. A ten per cent formalin solution is, I suppose, the most usual fixing fluid. That is all very well in the case of curettings or a small portion of a tumour, but when the pathologist is expected to pronounce upon the gross appearance of the specimen as well as the microscopic, this mixture is much too strong. The specimen (say it is a gall bladder or an appendix) will, before it reaches the laboratory, be hardened to the consistency of leather and the natural colour will have completely gone. The pathologist cannot be expected to pronounce upon content, colour of mucous membrane and consistence of a gall bladder or Fallopian tube which has been even for an hour or two in ten per cent formaldehyde. I have subjected this matter to test and I find that a one per cent mixture of formaldehyde in normal saline is a suitable medium in which to retain surgical material for a few hours or even days. Haemolysis will eventually occur in such a fluid, but the tissue will preserve its original consistence and autolysis will be prevented for a reasonable time; not indefinitely of course, but during the time that is occupied in sending to some central laboratory such changes will be slight. As regards the container, a small glass bottle with cork suits admirably for small specimens. I see no particular advantage in an expensive screw top bottle, the top of which is often difficult to remove. Needless to say, the bottle should be of suitable size with a sufficiently wide mouth for the specimen, otherwise it may be necessary to smash the bottle in order to obtain the tissue intact. Such a bottle may be enclosed in a cardboard container. My clients in the various hospitals in the neighbourhood of Kingston have shown considerable ingenuity in devising outfits for themselves. If a central laboratory undertakes to report upon material at a dollar a specimen the outfit may well be left to the institution from which the specimen comes, especially in these days of curtailed expenditure, with outfits obtainable only in foreign countries at enhanced prices.

Examination of Tissues.

Having received the specimen the next duty of the pathologist is the examination of it. There are two parts to the investigation—gross and microscopic. And let me say that these are of equal importance in most instances and supplement each other.

For the gross examination, in addition to the hands for purposes of palpation, certain instruments are required. The following are advisable: a celluloid rule

divided into inches and centimetres, a fairly large and very sharp knife, a pair of good scissors with one point sharp, the other blunt, a pair of dissecting forceps and a probe. A syringe for injecting appendices for the discovery of ruptures, as advocated by Bernhard Steinberg, is useful. A pair of rubber gloves for the hands is on the safe side although I personally seldom use them. What is advisable is a magnifying lens or, better, a dissecting microscope. I strongly recommend the Speera Binocular Spectacle Magnifiers sold by W. Watson and Sons of London, England. They are made in three magnifications—the focal length of the lenses being 5, 7 and 10 inches respectively, giving magnifications of 3.5, 2.5 and 1.75 diameters. The price of each is two pounds.

Lastly, it is necessary to have a block of wood on which to do the cutting; this should be placed in a shallow tray in order to catch blood, exudate, or fluid from incised cysts. The bench upon which the examination is done should, of course, be in a good light. The services of a secretary or the use of a dictophone is advisable, for it is a hard matter to handle a specimen and at the same time to write a description of it.

Gross Examination

Now comes the examination of the specimen. The first part of such investigation is, as always, inspection with careful measurements. Accurate measurements in centimetres or inches may not often be a matter of vital importance but in recalling the gross characters of a specimen which has perhaps already been destroyed the pathologist will find a record of measurements of no little importance. Careful palpation is a necessary part of all gross examination. This is particularly the case with breast specimens. Each firm area in a breast should be defined and separately incised. Where there is an unopened channel, as in the appendix, this must be slit and the contents subjected to microscopic analysis for nematodes, cells, ova and foreign bodies. The content of Fallopian tubes will be filmed and stained for micro-organisms. Organs such as the thyroid and prostate glands should be opened by a series of parallel incisions. It is remarkable how frequently a small ade-

nomatous nodule is buried in a thyroid and only found on making a series of slices. Cysts of the ovary and breast should be examined as regards their walls and their lining, as well as their content. Particular attention should be paid to the presence of any papillomatous ingrowths in cysts. Lastly, consideration should be given to the possibility of some of the appearances, haemorrhages for instance, being due to handling of the specimen by the surgeon. Much that is seen in an appendix, for example, must be discounted for this reason. It is however, quite impossible adequately to deal with this question without writing a small text book on the subject.

All specimens should be kept for at least a week after they have been received. Time must be given for the surgeon to reply to the report before the gross material is discarded. In the case of hospitals with a resident pathologist, an opportunity should be afforded the surgeons of going over the material of the week, gross and microscopic, with the pathologist himself. This may be done at a special séance, say on a Sunday morning.

Some specimens will be of sufficient interest to preserve permanently and a few of these will be worthy of recording in papers, the surgeon and pathologist collaborating for such a purpose. Undoubtedly much valuable material has been lost to medical literature in the past which will now, one hopes, be preserved. The difficulty is often for the clinician to get over his *vis inertia* in such a matter. He is shy of appearing in print and diffident regarding his knowledge of current literature. But in these days of frequent visits to large centres on the part of practitioners and of facilities offered by lending libraries, such difficulties should be overcome. It is all to the good that our journals should encourage the literary efforts of medical men in the smaller provincial centres.

Valuable specimens should, of course, find their way to a teaching museum. Although strictly speaking the property of the patient, it generally follows that the disposal of the material is in the hands of the surgeon if he is interested, of the pathologist if he is not. The school affinities of these gentlemen will determine the ultimate resting place of the rare specimens and as a teacher of pathology I would ask all my former pupils to remember this. It is a mistake to multiply museum centres un-

necessarily. Private collections are certain to be eventually dispersed and often disappear. It may be necessary for the smaller hospitals to preserve a few specimens for purposes of teaching their nursing staffs. But it is of the rareties, not the teaching material, that I am speaking.

Microscopic Examination

The last point is the selection of material for microscopic investigation. For the experienced pathologist, microscopic examination is not always necessary if he has been able to carry out a complete naked eye investigation. The tyro should, of course, section everything he can lay his hands on, otherwise he will never acquire his experience. Moreover, it is advisable to have microscopic records for reference purposes and for purposes of classification, even when a diagnosis from the gross specimen can be given with confidence. Few rules can be laid down for selection of the exact piece to submit to microscopic examination. A portion of a channel such as appendix or Fallopian tube should include all the coats. When sectioning a piece of a bowel tumour a portion of the normal mucosa should be included. The margin of a tumour should be selected, rather than the centre. Not infrequently, as in the case of breast and prostate, a complete investigation necessitates the taking of several pieces, or even of the sectioning of the entire specimen by means of very large paraffin preparations, if facilities are available.

As to the subsequent treatment, that too is a matter of experience. The pathologist soon acquires the knowledge necessary to enable him to decide whether to cut a section with the freezing microtome or to pass the

material at once into paraffin. Some laboratories use one of the quick paraffin methods as a matter of routine. Personally I prefer, when possible, to cut the specimens frozen and then pass the remainder of the block of tissue into paraffin. Many specimens, such as curettings, will without delay be passed through into paraffin.

As regards the disposal of the microscopic slides, these should, of course, be numbered and stored. It is perhaps customary to keep such collections for reference for at least three years. But cases often return at longer intervals than this to hospitals and require checking up on reports, so that a longer period of storage is advisable. I would be inclined to offer for a small additional sum an extra slide for the surgeon to keep, with a view to stimulating his interest in microscopic pathology. Arrangement can be made with the surgeon that this be done as a matter of routine.

Although the establishment of reporting centres for pathological material at a nominal rate has often been unfair to the pathologist as a specialist, if properly conducted the general result should be beneficial to all concerned. More accurate and detailed hospital records will result. The stimulation of interest in the surgeon in his surgical pathology, the greater experience and confidence he will acquire therefrom and the incitement to original research are all consummations devoutly to be desired. The maximum of benefit will, however, be obtained only by a close coöperation between operator and pathologist, and this can be effected only through thought and trouble taken on the part of both.

NEWS NOTES

Congress of the International Council of Nurses

THE congress of the International Council of Nurses will be held in Paris and Brussels, commencing July 10th. The Canadian Nurses' Associa-

tion is sponsoring a congress tour. Low inclusive fares are offered and details may be obtained from the secretary of the Canadian Nurses' Association or from Thos. Cook and Son's travel agency.

Alberta

MISS K. BRIGHTY, superintendent of the provincial public health nursing division and registrar of the Alberta Association of Registered Nurses has been appointed a delegate to the congress of the International Council of Nurses which will be held in Paris and Brussels in July. Miss Mary Garde of the provincial health department will also attend this convention.

Saskatchewan

THE provincial government recently sanctioned a plan of voluntary sickness insurance for its employees. The scheme provides medical, nursing and hospital services for a period of thirteen weeks. It also provides a cash indemnity for loss of life or serious permanent disability through accident. The cost to civil servants desiring to enter the scheme is one dollar a month and arrangements have been made whereby this amount is deducted from their salaries. It is estimated that about 1,500 employees are taking advantage of the plan.

Manitoba

IN a concerted effort to induce parents and guardians to have their children protected against diphtheria, a Diphtheria Prevention Week was arranged for the week of April 23rd. The advantages of toxoid were urged in the schools, in the press, through

social organizations, from the pulpit and by posters and radio.

Owing to the present economic situation, it has been necessary to reduce the public health nursing service. Nurses will be retained in the unorganized districts and the cities and several municipalities have decided to retain the service at their own expense. In the districts vacated by the nurses the four supervisors will render assistance in the control of epidemics and in toxoid programmes and will supervise children's boarding homes and private maternity homes, arrange tuberculosis clinics and follow up tuberculosis patients.



DR. J. W. FRASER

Medical Officer of Health, Kitchener, and President of the Ontario Health Officers' Association, which is holding its 19th annual meeting in Toronto on May 16th, 17th and 18th.

Ontario**ANNOUNCEMENT**

was made recently of the appointment of Miss Nora Moore as director of public health nursing for the city of Toronto. Miss Zoda N. Keefer has been appointed assistant director of the division.

Quebec

AN Act just passed by the Legislative Assembly of the province establishes as permanent the county health units previously organized throughout the province and authorizes the Lieutenant-Governor-in-Council to create new health units in counties not yet so organized, upon recommendation of the Provincial Bureau of Health.

CURRENT HEALTH LITERATURE

These brief abstracts are intended to direct attention to some articles in various journals which have been published during the preceding month. The Secretary of the Editorial Board is pleased to mail any of the journals referred to so that the abstracted article may be read in its entirety. No charge is made for this service. Prompt return (after three days) is requested in order that the journals may be available to other readers.

Lead Poisoning in Children

This is a report of a symposium held on sixteen cases of lead poisoning in young children and infants who were admitted to a children's hospital in Montreal in 1932. The poisoning was traced to toys painted with yellow paint containing lead chromate, which had been chewed or sucked by the children. All cases were admitted under other diagnoses which included tuberculous meningitis, poliomyelitis and brain tumour. These diagnoses are explained by the occurrence of the severer cerebral manifestations of lead poisoning in infants. Two of the cases proved fatal, with acute cerebral manifestations.

An editorial dealing with this subject stresses the importance of correct diagnosis, not only on account of the immediate danger to life, but because of the possibility of serious sequelae, particularly chronic nephritis, in neglected or unrecognized cases.

Canad. M. A. J., 28: 207 (Feb.), 1933.

Diabetes Mortality

From 1901 to 1931, in New York City, the recorded mortality from diabetes has risen from a crude rate of 14.2 per hundred thousand to 27.1 and from a standardized death rate of 17.3 to 27.9. The increase has occurred in the older age groups, over 55 years in males and over 45 in females. The death rate in males has increased only from 18.3 to 19.0, but in females has increased from 16.3 to 35.5. The mortality is strikingly greater among Jews than among Gentiles.

Godias J. Drolet, J.A.M.A., 100: 733 (Mar. 11), 1933.

Total Gastrectomy for Carcinoma

The answer to this question appears to be "Yes". Specimens have been recovered from various animal hosts: the fox, mink and raccoon. One raccoon specimen was obtained from Ontario. All the human cases reported in the United States, however, are certainly or probably of foreign origin, and it is only under quite unusual conditions that infestation of man with this parasite could occur in Canada or the United States.

Waltman Walters, J.A.M.A., 100: 804 (Mar. 18), 1933.

Smallpox Incidence in the United States

During the past two years a notable decrease in smallpox incidence in the United States has occurred, as the following figures relating to reported cases show: 1928—39,396 cases, 1929—42,282 cases, 1930—

48,907 cases, 1931—30,232 cases, and 1932—11,168 cases. A possible relation between this decrease and the more general use of cold storage for smallpox vaccine in the field is suggested.

Pub. Health Rep., 48:265 (Mar. 17), 1933.

Maternal Mortality Study for Cleveland, Ohio

From a complete and detailed study of every puerperal death in Cleveland during 1931 the following conclusions are drawn. Sepsis, toxemias and haemorrhage play a major part and are associated largely with hurried and operative obstetrics. Apart from deaths from abortion, which should be separated from those after the 28th week, the midwife plays a relatively minor role in contributing to the high maternal mortality rate (9.3 per 1,000 live births, or 8.9 per 1,000 live and stillbirths). Prenatal care and hospitalisation may or may not be associated with a low maternal mortality, depending on the type of medical, nursing and hospital care afforded. Eighty-five per cent of the puerperal deaths occurred in 31 hospitals in which 60 per cent of the total live and still births occurred. Even if all abortion deaths are eliminated, the hospital death rate still remains considerably higher than that in the homes.

Richard A. Bolt, Am. J. Pub. Health, 23:109 (Feb.), 1933.

Some Epidemiological Features of the Pneumococcus and its Types

For the past three years a detailed study of lobar pneumonia has been in progress in Glasgow and some of the findings are presented in this paper. In over 1,000 hospital cases of lobar pneumonia the infecting type was as follows: type I, 38 per cent; type II, 36 per cent; type III, 4 per cent; and group IV, 22 per cent. Case mortalities were: type I, 10.7 per cent; type II, 19.6 per cent; type III, 42.9 per cent; and group IV, 8.4 per cent. Case mortality rises rapidly with age and type III, the most severe infection, is more common in later years. The relationship between altered age incidence and change in type incidence to the variation in case mortality from season to season and year to year remains to be determined. As others have found, the carrier condition is readily established but there is little evidence of direct infection by carriers or contacts. Lobar pneumonia shows a periodic peak seasonal incidence from February to April, while broncho-pneumonia tends to pursue an erratic course and to exhibit irregular and wide variations.

A. S. M. MacGregor, Pub. Health, 46:117 (Jan.), 1933.

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